

OCTOBER 1960

VOL. XXX, NO. 4

Review of Educational Research

HIGHER EDUCATION



AMERICAN
EDUCATIONAL RESEARCH ASSOCIATION

REVIEW OF EDUCATIONAL RESEARCH

The purpose of the REVIEW is to report the major research findings during a designated period, organized by areas of interest. The REVIEW identifies the significant studies, summarizes them, and, within limitations of space, critically analyzes them. It seeks to present syntheses of research findings which reflect educational insight and stimulate new research.

The more active fields of educational research are reviewed every three years; the less active fields are included in alternate cycles. (See inside back cover.)

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REVIEW OF EDUCATIONAL RESEARCH

*Official Publication of the American Educational Research Association.
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Volume XXX, No. 4

October 1960

Higher Education

Reviews the literature for the six-year period since the issuance of
Vol. XXIV, No. 4, October 1954.

TABLE OF CONTENTS

Chapter	Page
I. The Entering College Student—Background and Characteristics	285
PAUL HEIST, <i>University of California, Berkeley, California</i>	
II. College Admission-Selection Studies	298
JOSHUA A. FISHMAN, <i>University of Pennsylvania, Philadelphia, Pennsylvania</i>	
ANN K. PASANELLA, <i>College Entrance Examination Board, New York, New York</i>	
III. The College Environment	311
C. ROBERT PACE, <i>Syracuse University, Syracuse, New York</i>	
ANNE MCFEE, <i>Stanford University, Stanford, California</i>	
IV. The Outcomes of College	321
BENJAMIN S. BLOOM, <i>University of Chicago, Chicago, Illinois</i>	
HAROLD WEBSTER, <i>University of California, Berkeley, California</i>	
V. The Educational Program	334
RUSSELL M. COOPER, <i>University of South Florida, Tampa, Florida</i>	
LEWIS B. MAYHEW, <i>University of South Florida, Tampa, Florida</i>	
LELAND L. MEDSKER, <i>University of California, Berkeley, California</i>	
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CHESTER L. NEUDLING, <i>U. S. Office of Education, Washington, D. C.</i>	
VI. The Improvement of Instruction	351
W. J. MCKEACHIE, <i>University of Michigan, Ann Arbor, Michigan</i>	
VII. Noninstructional Services	361
DANIEL D. FEDER, <i>University of Denver, Denver, Colorado</i>	
DANIEL J. SILLERS, <i>University of Denver, Denver, Colorado</i>	

<i>Chapter</i>	<i>Page</i>
VIII. Evaluations of Institutions and Programs	371
DEWEY B. STUIT, <i>State University of Iowa, Iowa City, Iowa</i>	
IX. Government, Administration, Co-ordination, and Financing of Higher Education	385
ALGO D. HENDERSON, <i>University of Michigan, Ann Arbor, Michigan</i>	
M. M. CHAMBERS, <i>University of Michigan, Ann Arbor, Michigan</i>	
Index	398

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CHAPTER I

The Entering College Student—Background and Characteristics*

PAUL HEIST

NO PREVIOUS time in educational history has felt so much concern about the students who attend institutions of higher education, nor has there ever been so great a need simply to count the number entering different institutions and programs. Inadequacy of facilities, and often of faculty, is a continual concern, but increasingly large numbers of students at the college level since the second world war has intensified old and new problems of staff, educational program, and physical plant and equipment. In the last decade the questions, "Who should go to college?" and "Where should they go?" have for the first time become matters of widespread concern and debate.

Little research has brought a theoretical and experimental approach to the problems of selection, retention, and achievement. Institutions which are pressed for decisions regarding new policies and procedures on enrollment will as yet find little evidence to serve as a basis for making such decisions. The findings from surveys and studies to be reviewed here indicate that decisions concerning size of student body, character and quality of students to be admitted, and plans for expansion will be forced upon many administrators and staff before the data are available on which policies concerning admission and appropriate selection of students can be objectively determined. However, we seem to be in the early stages of a period in which the need for research is being recognized, and both educational agencies and individual institutions are beginning the necessary investigations (15, 16, 17, 45).

In this chapter the major emphasis is on *entering students*—in what numbers they are and will be coming, and what is known about the characteristics they possess.

Attendance Patterns in American Higher Education

The question of the number to be educated, since it bears directly on two of the major problems discussed by the President's Committee on Education Beyond High School (57), namely, the need for qualified teachers and the need for expanded facilities, is no longer a matter of the future; it is one of imminent significance.

* In keeping with Review policy, the literature reviewed was limited to that appearing 1956 and later. Only a few references, significant for historical reasons, antedate the last four years.

Current Enrollment Figures

There are several sources of enrollment data and trends at both the national and subnational levels. National data are regularly available from two sources: the Division of Statistics and Research Services of the U.S. Office of Education (34, 35, 56) and the annual survey by Walters (67, 68, 69). The Walters surveys have been conducted for 40 years, whereas those of the U.S. Office of Education have been available consecutively for only 14 years. The reports from the Office of Education present a more comprehensive survey of enrollment, inasmuch as they include all degree-credit students, in all institutions of higher education offering programs consisting wholly or principally of work applicable toward a baccalaureate or a graduate degree. In the 1958 survey, for example, only six out of 1903 institutions failed to furnish information (35). The publications from both agencies include generally excellent interpretations of the tabular data presented.

The first-time enrollment figures indicate that the number of entering freshmen has set a record for the last four years (the previous high was in 1949), although 1959 is the eighth year of successive first-time enrollment increases. The entering total in 1959 represented an increase of 5.9 percent over the preceding year, and the total enrollment rose 4.4 percent (35).

The data from these publications will be more meaningful if considered by type of institution (level and/or emphasis of the educational program). To illustrate, in the fall of 1959 approximately 4 to 6 percent more students than in the previous year entered junior colleges, teachers colleges, and universities, and 7.6 percent more entered liberal arts colleges; the enrollment in technological schools jumped 14.6 percent (35). In all cases, the increases were greater for women entrants than for men in each of the three years, 1957-59.

The number of students enrolled in 1959 in the United States and contiguous areas was equivalent to 36.2 percent of the population aged 18 through 21 (35). (This figure may be slightly misleading, since a great many college students are, of course, not "college-age.") The proportion has increased steadily since 1951, when 24 percent of the same age group were enrolled (35); in 1956 the percentage was 33.2. The estimated college enrollment in 1939 was equal to only 14.3 percent of the 18- through 21-year-olds; by 1970, the figure is expected to reach 44 percent (39).

Regional Differences

The national and annual state surveys (to the extent that the latter are available *) show considerable variation among geographical regions, not

* Data from state surveys, which vary considerably in scope, quality, and comparability of information, could not be summarized because of space limitations.

only in actual numbers enrolled in colleges, but also in the rates of enrollment change (35). Curiously enough, in the Far West and Southwest, which supposedly will have the greatest growth in the 18-24 age group between 1955 and 1973 (57), the growth in college attendance was not proceeding at a comparable rate.

For four-year institutions the increases among the major regions between 1957 and 1958 ranged from 5 to 14 percent. There was much more variation in the percentage increases in junior-college entrants; in the Far West there was almost no change, whereas the Rocky Mountain states experienced a 15.7 percent change, and six of the individual states in the Northeast had increases ranging from 21.9 to 69.8 percent (35).

Differences by Sex

There has been a growing concern about the education of women. Those interested in the topic should review the constructive reports of the Commission on the Education of Women of the American Council on Education (9, 10). All current studies relating particularly to women's education are reviewed in the *Information and Research Notes* published by the Commission (9).

In 1959, the women enrolled at all levels of higher education composed 36.1 percent of the total enrollment (34). From 1950 on, the percentage of the total enrollment accounted for by women has varied only slightly from 35 percent. Since 1957 an upward trend in the number of women has been in evidence; in 1959 this continued, with a 7 percent gain over the number entering the previous year, compared to a 3 percent gain for men (34). First-time enrollment, as well as total enrollment of women, has also increased more rapidly than enrollment of men since 1956.

It is of interest that the larger increases in numbers of women in the last few years, in comparison to those of men, occurred in all types or levels of institutions as they are categorized by the Office of Education. Even in technological and professional schools women held a slight edge, and in 1957-58 and 1958-59 the number of women in theological institutions grew proportionally much faster than the number of men (35).

Public Versus Private Institutions

The influx of larger numbers of students in the next decade will of necessity mean that proportionately more will be going to colleges under public control. This has been the trend of the last two decades, although the increases were small. The disparity will rapidly become greater because the support necessary for current operation and capital outlay must come in increasing proportion from public sources.

In the fall of 1959, almost 60 percent of all degree-credit students were in publicly controlled colleges and universities. This figure was only about

5 percent greater than the proportion in 1939. Though this difference (5 percent) characterized the shift in four-year colleges over the past two decades, the proportions changed considerably for junior colleges; 72 percent of their students were in public institutions in 1939, and 86.7 percent in 1959 (35, 69).

Graduate and Professional Schools

A fairly complete survey of the size and trends of graduate enrollments in various disciplines was published by the National Science Foundation in 1957 (51); this was based on a nationwide study of 1954. A briefer report on the distribution of graduate students in universities in the fields of the humanities, the social sciences, the biological sciences, and the physical sciences documented the shift over 60 years from the humanities to the sciences (1, 13).

As part of an excellent survey of college-going in Wisconsin, Little (43) investigated the plans of 90 percent of the seniors graduated from all degree-granting colleges in the state. He found that only one in seven expected to enter a graduate or a professional school; the greatest number of those seeking further education was in the natural sciences. Gropper and Fitzpatrick (23) in 1959, using a sample of 3581 students (undergraduate, graduate, and professional) from 35 institutions, explored the factors which influenced college graduates to continued their education. Two reports by the National Academy of Sciences (48, 49), preceding these others by several years, dealt essentially with the undergraduate college origins of doctorates in the various major fields.

Two comprehensive publications on the education of business students, by Gordon and Howell (22) and Pierson and others (53), are particularly illustrative of the lack of information about students in professional fields. Both studies reported that the average major in business administration was lower in scholastic aptitude than the average college student but gave few additional objective data on special aptitudes, interests, values, attitudes, or intellectual dispositions.

Studies of students entering several professions (those involving extensive education beyond an undergraduate degree) have grown in number during the latter half of the last decade. These vary considerably in scope, objectives, and the samples of students involved. The medical profession has received the major share of attention from several research groups; in two studies the emphasis was largely sociological (4, 47). Preliminary reports from the research staff of the Association of American Medical Colleges (18, 19, 20) on a longitudinal study of the characteristics and changes in attributes of medical students, from entrance to internship, have been released. Of particular interest was the evidence that medical specialties and certain groups of medical schools were differently selective or attractive as shown in students' measured personality characteristics.

The Council on Dental Education published the results of two surveys of entering dental students (2, 3). Heist (27) discussed the personality characteristics of a large sample of dental students and commented especially on the relatively few who showed potentiality for research and scholarship. Clark (7) took a diligent look at those who entered the profession of psychology; Holt and Luborsky (33) did the same for recruits to psychiatry, but with a considerably different approach from Clark's and from those of any of the other studies of professional students.

Students Abroad

The only comprehensive report on American students abroad and foreign students in the United States is *Open Doors* (37), released annually by the Institute of International Education. The information is obtained through surveys of specific institutions; in the last report on students abroad (for the year 1957-58), 78 percent of the 960 foreign institutions surveyed replied, and 57 percent of these reported a total of 10,213 students from the United States. This total of United States students represents a sudden increase of 34 percent over the number studying abroad in the previous year.

Selectivity of Higher Education in Ability and High-School Achievement

There is still a dearth of information on the relationship of ability to college attendance. The estimates quoted by Wolfle (76) in 1954 are still referred to as a base point for more recent figures. This report and one by Berdie in the same year (5) indicated that ability was the most important single characteristic associated with plans for college attendance or college-going. A study by the Educational Testing Service in 1956 (62) gave strong support to this conclusion by showing that ability was the major factor in college-going, even in a rather homogeneous, high-ability group. However, of the large national sample of high-school seniors studied, about one-fifth of those in the top 10 percent in ability were found to have no expectation of going to college. In a more recent report, Bridgman (6), after making an adjustment for the number entering the military service from high school, estimated that 95 percent of the male and 60 percent of the female high-school graduates in the highest tenth of ability entered college. For the top 30 percent in ability the percentages dropped to 90 and 58 percent for men and women, respectively.

A comprehensive state-wide inquiry in Wisconsin showed that high-school graduates attending college were mainly from the top third of their classes, both in aptitude test scores and in achievement (grades); the great majority of those in the lower two-thirds in ability were not planning to enter college (42, 43).

The selectivity in scholastic aptitude of American higher education as a whole, as well as selectivity by regions, by type of control, and by level of educational program, has been studied by the Center for the Study of Higher Education at the University of California, Berkeley (26, 44, 46). The data from a stratified random sample of all institutions of higher education documented the enormous diversity in the ability of entering students within and among institutions of all types.

Selectivity in Nonintellectual Characteristics

Comparatively little work has been done on the diversity within and among institutions in students' economic and social background, attitudes, and personality characteristics.

Socioeconomic Background

The cost of higher education, which is rapidly increasing, has been shown to be an important determinant of whether or not students attend college at all, and also of the particular schools they enter (8, 31, 32). Iffert (36) presented one of the more complete and informative reports on the relationship of economic background to such variables as receipt of scholarships and persistence, and showed that there is a relationship between the type of institution attended and the income level of the family. A recent study has shown that types of institutions in Minnesota are differentially selective in social background (44).

Several recent studies have emphasized the growing importance of scholarships and loans to undergraduates (39, 52, 74). Thistlethwaite (64, 65) analyzed the influence of scholarship awards as a determinant in the choice of college or university by high-ability students and believed scholarship to be a factor in the concentration of such students in a limited number of institutions.

The Educational Testing Service, investigating the college plans of more than 17,000 males, found that ability and father's occupation were significant factors in the student's decision (62). Sewell, Haller, and Straus (59), reporting one of the few extensive investigations involving a large sample of high-school seniors, found no relationship between the social status of the student's home and his level of educational or occupational aspiration when measured intelligence was controlled. Haller and Sewell (24) also found that rural-urban distinction in residence was not associated with educational or occupational aspirations in the case of Wisconsin high-school girls, and that, in the case of boys, occupational aspiration could not be predicted from residence, but that farm boys have less interest in a college education than do others. Smith and Penny (60) offered critical comments on some of the literature on educational opportunity as a function of socioeconomic status.

Both Wolfe (76) and Lipset and Bendix (41) concluded that, although social class may be related to college entrance, after admission the relationship between educational achievement and socioeconomic levels almost entirely disappears.

Values and Attitudes

A widespread concern about student values and attitudes is evident in the recent literature, the greatest part of which, however, is not based on research, although investigations in these aspects of behavior and development are rapidly growing in number.

The American Council on Education brought out a descriptive report (75) on entering students based mainly on a review of the literature and on interviews with research staff and administrators. To facilitate understanding of students and their education, the author argued for an increased perspective and a closer look at the supposedly changing attitudes of the current student bodies. A subsequent publication by Eddy (12), based on observations and interviews in 20 selected institutions, presented a "global," qualitative analysis of the attitudes of students and discussed implications for character education in the light of the thinking of students and the existing curriculums. There is little concrete information about the students in this second study, and the two reports differ on an interesting point. The former took special note of the differences in values and attitudes among students, whereas the latter stated that students in this country are not characterized by diversity, but by general similarity.

An interesting comparison between students and faculty in the way they view the important goals of education emerged from a study by Jarvis and Congdon (38). Freshmen could better predict faculty goals than could seniors. Faculty consistently placed intellectual goals highest; students, socioeconomic goals. Sussman (63) presented a critical review of the morale of freshmen in the performance-oriented atmosphere of Massachusetts Institute of Technology; she concluded that this environment is especially congenial to the attitudes and values of the upwardly mobile sons of middle-class and working-class families. The Little study (42) of high-school seniors in Wisconsin and a study by Douvan and Kaye (11) on a large sample of Girl Scouts presented information on goals and attitudes toward further education on the part of precollege youth.

The most recent, as well as the most comprehensive, work on the attitudes of students was produced by a team of sociologists (21). Their data reflected the thinking of students on a number of campuses regarding educational values, political and social attitudes, religious beliefs and practices, and sexual practices. The authors interpreted the students' professed attitudes, values, and behavior as products of the cultural milieu in which the institutions and students were located. They found the students positively oriented toward education and its values, uninterested in politics,

apathetic and conservative, and exhibiting religious beliefs (and a need for believing), but not strongly committed to these convictions. This investigation, which would have been improved by more thorough analysis, nonetheless may serve as a major reference point for future research on what college students think and believe.

A preliminary report on a four-year study at Michigan State University (40), which was concerned primarily with changes in student attitudes, included an extensive analysis of attitudinal responses in relation to a variety of background factors.

Personality Characteristics

The use of personality inventories and other psychological instruments to differentiate the characteristics of student bodies at various colleges and universities and subgroups within institutions has increased markedly (18, 28, 58, 61). In 1956 a major contribution by Stern, Stein, and Bloom (61) was directed to numerous facets of personality and attitude measurement. Of particular interest was the identification of three groups along an authoritarian-equalitarian continuum—stereopaths, rationals, and non-stereopaths. The authors showed that institutions differed considerably in the relative numbers of students found in these groups.

Several studies, longitudinal in approach and chiefly concerned with behavioral change, did present descriptive data on incoming students. Through the Mellon Foundation study at Vassar, data on college students from several campuses on a number of new personality scales were made available (58, 70). Plant (54, 55), in presenting the results of studies relating changes in ethnocentrism to college experience, also reported mean scores for entering students in a state college. The results from both the Vassar and the Plant studies, on quite distinct freshman groups, gave a picture of basic conservatism.

A number of studies dealt with samples of high-ability students. Research from the Berkeley Center for the Study of Higher Education (26, 29) delineated the differences on selected personality characteristics between a large sample of National Merit Scholarship winners and the students in certain California institutions. Comparisons were also drawn among students majoring in various curriculums (29). In another investigation using the same sample, students were selected and placed in two subsamples representing colleges ranked high or low on a criterion of scholarly productivity; significant differences were found on a number of measures of personality characteristics and values (26, 46). Other groups of institutions were also shown, in the case of National Merit Scholars, to be differentially selective or attractive with respect to intellectual disposition (44). Holland (30) reported personality measures on the *California Psychological Inventory* on other groups of National Merit Scholarship winners.

What might be most simply described as a psychiatric orientation toward students and their problems is found in two books (14, 71) discussing the roles and adjustments of entering students and upperclassmen. The more recent of the two publications, on Yale students, is considerably more objective and quantitative than the other, on Harvard students, based, as it was, on a variety of researches.

Enrollments of the Future

Because of the increases in birth rate since 1940 and the trend toward greater college attendance among the college-age group (33 percent of the 18-year-olds in 1955 compared to 12.5 percent in 1930), great concern has been expressed about the numbers that will be "knocking at college doors" in 1965, 1970, and 1975. Early enrollment estimates, varying a little in the bases employed for prediction, indicated that the college population would be between 5 and 6 million in 1970 (39) and that the increases for specific states would vary between 15 and 230 percent (66).

Recent projections of enrollments to 1970 are in general agreement with the earlier ones, although the projection of 6 million may be an underestimate. A recent figure of 6,400,000 represents about 3,000,000 more students than the total enrollment of 1959 (39). The larger figure is based on the expectation that a decade hence about 44 percent of the 18- through 21-year-olds will continue their education beyond high school. The expectation is based in part on the current acceleration in enrollment increases, which may not remain the same. A survey conducted by Roper in 1959 (39) revealed that almost 70 percent of parents expected their children to go to college. Havighurst (25), however, estimated that the proportion of the college-age group in college is not likely to increase materially.

An analysis by the Western Interstate Commission for Higher Education (72) indicated that the greatest problems are to be faced in the Western region, where both a greater birth rate and a much greater immigration will bring more than two, and perhaps three, times as many students. To those concerned with the probable size of future enrollments, a fact book by the Western Interstate Commission (73) and the *Fact Book on Higher Education* by the American Council on Education (1) should be of genuine value.

If the proportion of youth the President's Commission on Higher Education deemed worthy of some level and type of post-high-school education *does* attend in 1970, more than 6,800,000 (rather than 6,000,000) will be going to college from the 18 through 21 age group alone (50). Whatever the degree of accuracy of the projected figures, the essence of the various reports can be taken at face value. That is, by the end of another decade the present provisions and facilities will be engulfed by the tremendous numbers of college-going youth.

Bibliography

1. AMERICAN COUNCIL ON EDUCATION, OFFICE OF STATISTICAL INFORMATION AND RESEARCH. *Fact Book on Higher Education*. Washington, D.C.: the Council, continuous. 157 p.
2. AMERICAN DENTAL ASSOCIATION, COUNCIL ON DENTAL EDUCATION. "Dental and Dental Hygiene Students: Their Characteristics, Finances and Practice Plans. 'II, Characteristics of Dental Students'." *Journal of the American Dental Association* 52: 72-80; January 1956.
3. AMERICAN DENTAL ASSOCIATION, COUNCIL ON DENTAL EDUCATION. "The Freshman Dental Student." *American Dental Association Journal* 58: 132-36; March 1959.
4. BECKER, HOWARD S., and GEER, BLANCHE. "Student Culture in Medical School." *Harvard Educational Review* 28: 70-80; Winter 1958.
5. BERDIE, RALPH F. *After High School—What?* Minneapolis: University of Minnesota Press, 1954. 240 p.
6. BRIDGMAN, DONALD S. *Losses of Intellectual Talent from the Educational System Prior to Graduation from College*. Washington, D.C.: National Science Foundation, 1959. 67 p. (Mimeo.)
7. CLARK, KENNETH E. *American Psychologists: A Survey of a Growing Profession*. Washington, D.C.: American Psychological Association, 1957. 247 p.
8. COLE, CHARLES C. *Encouraging Scientific Talent*. Princeton, N.J.: College Entrance Examination Board, 1956. 259 p.
9. COMMISSION ON THE EDUCATION OF WOMEN. *The Education of Women—Information and Research Notes*. Washington, D.C.: American Council on Education, 1958-60. March, June, October, and December 1958; March, June, and October 1959; March 1960: No. 1-8.
10. DAVID, OPAL D., editor. *The Education of Women—Signs for the Future*. Report of a conference on the Present Status and Prospective Trends of Research on the Education of Women sponsored by the American Council on Education. Washington, D.C.: American Council on Education, 1959. 154 p.
11. DOUVAN, ELIZABETH, and KAYE, CAROL. *Adolescent Girls: A Nation-Wide Study of Girls Between Eleven and Eighteen Years of Age*. Ann Arbor: Survey Research Center, Institute for Social Research, University of Michigan, 1957. 251 p.
12. EDDY, EDWARD D., JR. *The College Influence on Student Character*. Washington, D.C.: American Council on Education, 1959. 185 p.
13. EELLS, WALTER C. "Graduate Students in American Universities." *Association of American Colleges Bulletin* 44: 459-64; October 1958.
14. FARNSWORTH, DANA L. *Mental Health in College and University*. Cambridge, Mass.: Harvard University Press, 1956. 244 p.
15. FOLGER, JOHN K. "How Can Institutional Research Facilitate Continuous Planning and Progressive Change Required for Our Colleges?" *1960 Current Issues in Higher Education*. (Edited by G. Kerry Smith.) Proceedings of the Fifteenth Annual National Conference on Higher Education. Washington, D.C.: Association for Higher Education, 1960. 286 p.
16. FRICKE, BENNO G. "How Colleges Should Pick Their Students." *College Board Review* 34: 17-22; Winter 1958.
17. FUNKENSTEIN, DANIEL H. "What Does Higher Education Need to Know About the Student in Today's Changing Society?" *1960 Current Issues in Higher Education*. (Edited by G. Kerry Smith.) Proceedings of the Fifteenth Annual National Conference on Higher Education. Washington, D.C.: Association for Higher Education, 1960. 286 p.
18. GEE, HELEN H. "Differential Characteristics of Student Bodies: Implications for the Study of Medical Education." *Proceedings of the Conference on Selection and Educational Differentiation*. (Edited by T. R. McConnell.) Berkeley: Field Service Center and the Center for the Study of Higher Education, University of California, 1960. p. 125-154.
19. GEE, HELEN H., and COWLES, JOHN T., editors. *The Appraisal of Applicants to Medical Schools*. Evanston, Ill.: Association of American Medical Colleges, 1958. 262 p.

20. GEE, HELEN H., and GLASER, ROBERT J., editors. *The Ecology of the Medical Student*. Evanston, Ill.: Association of American Medical Colleges, 1958. 262 p.
21. GOLDSN, ROSE K., and OTHERS. *What College Students Think*. Princeton, N.J.: D. Van Nostrand Co., 1960. 240 p.
22. GORDON, ROBERT A., and HOWELL, JAMES E. *Higher Education for Business*. New York: Columbia University Press, 1959. 491 p.
23. GROPPER, GEORGE L., and FITZPATRICK, ROBERT. *Who Goes to Graduate School?* Pittsburgh, Pa.: American Institute for Research, 1959. 66 p.
24. HALLER, ARCHIE O., and SEWELL, WILLIAM H. "Farm Residence and Levels of Educational and Occupational Aspiration." *American Journal of Sociology* 62: 407-11; January 1957.
25. HAVIGHURST, ROBERT J. *American Higher Education in the 1960's*. Columbus: Ohio State University Press, 1960. 92 p.
26. HEIST, PAUL. "Diversity in College Student Characteristics." *Journal of Educational Sociology* 33: 279-91; February 1960.
27. HEIST, PAUL. "Personality Characteristics of Dental Students." *The Educational Record* 41: 240-52; July 1960.
28. HEIST, PAUL, and WEBSTER, HAROLD. "Differential Characteristics of Student Bodies: Implications for Selection and Study of the Undergraduates." *Proceedings of the Conference on Selection and Educational Differentiation*. (Edited by T. R. McConnell.) Berkeley: Field Service Center and Center for the Study of Higher Education, University of California, 1960. p. 91-106.
29. HEIST, PAUL, and WILLIAMS, PHOEBE. *Manual for the Omnibus Personality Inventory*. Berkeley: Center for the Study of Higher Education, University of California, November 1957. 22 p. (Mimeo.)
30. HOLLAND, JOHN L. "The Prediction of College Grades from the California Psychological Inventory and the Scholastic Aptitude Test." *Journal of Educational Psychology* 50: 135-42; August 1959.
31. HOLLIS, ERNEST V. "Costs of Attending College." *Higher Education* 13: 141-43; April 1957.
32. HOLLIS, ERNEST V., and OTHERS. *Costs of Attending College*. U.S. Department of Health, Education, and Welfare, Office of Education, Bulletin 1957, No. 9. Washington, D.C.: Superintendent of Documents, Government Printing Office, 1957. 91 p.
33. HOLT, ROBERT R., and LUBORSKY, LESTER. *Personality Patterns of Psychiatrists*. Menninger Clinic Monograph Series, Vol. 1, No. 13. New York: Basic Books, 1958. 386 p.
34. HUDDLESTON, EDITH M., and POOLE, HAZEL C. "Opening College Enrollment, Fall 1959." *Higher Education* 16: 9-13; January 1960.
35. HUDDLESTON, EDITH M., and POOLE, HAZEL C. *Opening (Fall) Enrollment in Higher Education, 1958: Analytic Report*. U.S. Department of Health, Education, and Welfare, Office of Education, Circular No. 545. Washington, D.C.: Superintendent of Documents, Government Printing Office, 1959. 30 p.
36. IFFERT, ROBERT E. *Retention and Withdrawal of College Students*. U.S. Department of Health, Education, and Welfare, Office of Education, Bulletin 1958, No. 1. Washington, D.C.: Superintendent of Documents, Government Printing Office, 1957. 177 p.
37. INSTITUTE OF INTERNATIONAL EDUCATION. *Open Doors 1959*. New York: the Institute (1 E. 67th St.), 1959. 48 p.
38. JERVIS, FREDERICK M., and CONGDON, ROBERT G. "Student and Faculty Perceptions of Educational Values." *The American Psychologist* 13: 464-66; August 1958.
39. KEEZER, DEXTER M., editor. *Financing Higher Education: 1960-70*. New York: McGraw-Hill Book Co., 1959. 304 p.
40. LEHMANN, IRVIN J., and IKENBERRY, STANLEY O. *Critical Thinking, Attitudes, and Values in Higher Education*. East Lansing: Michigan State University, 1959. 125 p. (Mimeo.)
41. LIPSET, SEYMOUR M., and BENDIX, REINHARD. *Social Mobility in Industrial Society*. Berkeley: University of California Press, 1959. 309 p.
42. LITTLE, J. KENNETH. *Explorations into the College Plans and Experiences of High School Graduates*. Madison: School of Education, University of Wisconsin, 1959. 120 p.

43. LITTLE, J. KENNETH. *A State-Wide Inquiry into Decisions of Youth About Education Beyond High School*. Madison: School of Education, University of Wisconsin, 1958. 124 p.
44. MCCONNELL, THOMAS R. "Differential Selectivity of American Higher Education." *The Coming Crisis in the Selection of Students for College Entrance*. (Edited by K. E. Anderson.) Symposium at the annual meeting of the American Educational Research Association. Washington, D.C.: the Association, a department of the National Education Association, 1960. 39 p.
45. MCCONNELL, THOMAS R., editor. *Proceedings of the Conference on Selection and Educational Differentiation*. Berkeley: Field Service Center and Center for the Study of Higher Education, University of California, 1960. 187 p.
46. MCCONNELL, THOMAS R., and HEIST, PAUL. "Do Students Make the College?" *College and University* 34: 442-52; Summer 1959.
47. MERTON, ROBERT K.; READER, GEORGE G.; and KENDALL, PATRICIA L. *The Student Physician: Introductory Studies in the Sociology of Medical Education*. Cambridge, Mass.: Harvard University Press, 1957. 360 p.
48. NATIONAL ACADEMY OF SCIENCES, NATIONAL RESEARCH COUNCIL, OFFICE OF SCIENTIFIC PERSONNEL. *The Baccalaureate Origins of Doctorates in the Arts, Humanities, and Social Sciences Awarded in the United States, 1936-1950*. Washington, D.C.: the Council, 1956. 131 p.
49. NATIONAL ACADEMY OF SCIENCES, NATIONAL RESEARCH COUNCIL, OFFICE OF SCIENTIFIC PERSONNEL. *The Baccalaureate Origins of the Science Doctorates Awarded in the United States, 1936-1950*. Washington, D.C.: the Council, 1955. 158 p.
50. NATIONAL EDUCATION ASSOCIATION AND AMERICAN ASSOCIATION OF SCHOOL ADMINISTRATORS, EDUCATIONAL POLICIES COMMISSION. *Higher Education in a Decade of Decision*. Washington, D.C.: the Commission, 1957. 152 p.
51. NATIONAL SCIENCE FOUNDATION. *Graduate Student Enrollment and Support in American Universities and Colleges*. Washington, D.C.: Superintendent of Documents, Government Printing Office, 1957. 302 p.
52. PARKER, CLYDE A., and WRIGHT, E. WAYNE. "Do Scholarships Influence College Attendance?" *Journal of Higher Education* 27: 147-50; March 1956.
53. PIERSON, FRANK C., and OTHERS. *The Education of American Businessmen: A Study of University-College Programs in Business Administration*. New York, McGraw-Hill Book Co., 1959. 740 p.
54. PLANT, WALTER T. "Changes in Ethnocentrism Associated with a Four-Year College Education." *Journal of Educational Psychology* 49: 162-65; June 1958.
55. PLANT, WALTER T. "Changes in Ethnocentrism Associated with a Two-Year College Experience." *Journal of Genetic Psychology* 92: 189-97; June 1958.
56. POOLE, HAZEL C., and RAMSEY, LEAH W. *Opening (Fall) Enrollment in Higher Education, 1959: Institutional Data*. U.S. Department of Health, Education, and Welfare, Office of Education, Circular No. 606. Washington, D.C.: Superintendent of Documents, Government Printing Office, 1959. 34 p.
57. PRESIDENT'S COMMITTEE ON EDUCATION BEYOND THE HIGH SCHOOL. *Education Beyond the High School: Needs and Resources*. Washington, D.C.: Superintendent of Documents, Government Printing Office, 1957. 108 p.
58. SANFORD, NEVITT, issue editor. "Personality Development During the College Years." *Journal of Social Issues* 12: 1-72; No. 4, 1956.
59. SEWELL, WILLIAM H.; HALLER, ARCHIE O.; and STRAUS, MURRAY A. "Social Status and Educational and Occupational Aspiration." *American Sociological Review* 22: 67-73; February 1957.
60. SMITH, HERBERT A., and PENNY, LAWRENCE, L. "Educational Opportunity as a Function of Socio-Economic Status." *School and Society* 87: 342-44; September 12, 1959.
61. STERN, GEORGE G.; STEIN, MORRIS I.; and BLOOM, BENJAMIN S. *Methods in Personality Assessment*. Glencoe, Ill.: The Free Press, 1956. 271 p.
62. STICE, GLEN; MOLLENKOPF, WILLIAM G.; and TORGERSON, WARREN S. *Background Factors and College-Going Plans among High-Aptitude Public High School Seniors*. Princeton, N.J.: Educational Testing Service, 1956. 117 p.
63. SUSSMAN, LEILA A. *Freshman Morale at M.I.T.: The Class of 1961*. Cambridge: Massachusetts Institute of Technology, 1960. 99 p.

64. THISTLETHWAITE, DONALD L. "College-Scholarship Offers and the Enrollment of Talented Students." *Journal of Higher Education* 29: 421-24, 467-68; November 1958.
65. THISTLETHWAITE, DONALD L. "Merit Scholarships and the Higher Education of Gifted Students." *Journal of Higher Education* 30: 295-304; June 1959.
66. THOMPSON, RONALD B. "Numbers of College-Age Youth and College Enrollments Projected to 1975. *The College Blue Book*. Ninth edition. (Edited by C. E. Burckel.) Baltimore: C. E. Burckel, 1959. p. 921-32.
67. WALTERS, RAYMOND. "Forty Years of U.S. Collegiate Enrollments: 1919-20 to 1959-60." *School and Society* 88: 85-92; February 27, 1960.
68. WALTERS, RAYMOND. *Four Decades of U.S. Collegiate Enrollments*. New York: Society for the Advancement of Education, 1960. 24 p.
69. WALTERS, RAYMOND. "Statistics of Attendance in American Universities and Colleges, 1959-60." *School and Society* 88: 5-20; January 2, 1960.
70. WEBSTER, HAROLD. "Changes in Attitudes During College." *Journal of Educational Psychology* 49: 109-17; June 1958.
71. WEDGE, BRYANT M., editor. *Psychosocial Problems of College Men*. New Haven, Conn.: Yale University Press, 1958. 291 p.
72. WESTERN INTERSTATE COMMISSION FOR HIGHER EDUCATION. *Facing the Critical Decade: Source Book*. Boulder: University of Colorado, 1957. 97 p.
73. WESTERN INTERSTATE COMMISSION FOR HIGHER EDUCATION. *Fact Book on Western Higher Education*. Boulder: University of Colorado, 1959. 61 p. (Mimeo.)
74. WILKINS, THERESA B. *Financial Aid for College Students: Undergraduate*. U.S. Department of Health, Education, and Welfare, Office of Education, Bulletin 1957, No. 18. Washington, D.C.: Superintendent of Documents, Government Printing Office, 1957. 232 p.
75. WISE, WILLIAM MAX. *They Come for the Best of Reasons—College Students Today*. Washington, D.C.: American Council on Education, 1958. 66 p.
76. WOLFLE, DAEL L. *America's Resources of Specialized Talent*. New York: Harper & Brothers, 1954. 332 p.

CHAPTER II

College Admission-Selection Studies*

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Introduction

ADMISSION to college and selection of applicants has probably become the most intensively explored topic in educational-psychological research. Garrett (27) in his 1949 review covering nearly two decades mentioned approximately 194 studies; 580 studies made during the last 10 years were located.

The increased interest was a reflection of several developments. First, testing by standardized aptitude and achievement examinations sponsored by regional or national associations became an accepted part of the admission-selection process, though this fact was not entirely due to the greater number of applications or the practice of "selective admission." More testing has naturally resulted in more studies of the validity of the examining instruments and of the admission or guidance procedures; in addition, a number of such studies are attributable to colleges that have long practiced such procedures, but who have come to devote increasing attention to both technical perfection and philosophical justification in the light of the continued increase in number of applications. College admission-selection studies have therefore become more interrelated with theory and research in psychometrics, the social sciences, and educational psychology and philosophy.

The usual research design is that of correlation and regression, in which one or more *predictors* (measures taken previous to college admission) attempt to approximate one or more *criteria* (measures taken after the completion of one or more semesters of college attendance). The degree of predictive approximation to the criteria that is attained upon a relatively unselected group of applicants is taken as an indication of the efficiency of the particular set of predictors employed. It has become accepted to designate predictors and criteria as dealing with either *intellective* characteristics (aptitude-achievement test scores or course marks) or *nonintellective* characteristics (personality and motivational and attitudinal measures) of individuals. Since admission-selection studies may involve one or the other or both types of predictions as well as one or the other or both types of criteria, there are theoretically nine possible predictor-criterion combinations.

As the table on page 299 reveals, the first has thus far received most attention, and the combination of 1, 4, and 7 account for over 90 percent

* Inasmuch as no full treatment of this topic has previously appeared in the Review, for general statistical and comparative purposes this paper covers the decade 1949-59. Reference to individual studies, however, is limited to the period 1955-59.

of the studies. The common denominator in these predictor-criterion combinations is intellectual criteria (college grades) throughout. However, the greatest change occurred in connection with the greatly increased interest in nonintellectual predictors and criteria (20).

TABLE 1.—PREDICTOR-CRITERION COMBINATIONS

Num- ber	Predictors	Criteria	Studies(S)			
			Num- ber	Per- cent	Number of Colleges(C)	S/C
1.	Intellectual only	Intellectual only	408	70%	148	2.76
2.	Intellectual only	Nonintellectual only	2	^a	2	1.00
3.	Intellectual only	Both	2	^a	2	1.00
4.	Nonintellectual only	Intellectual only	64	11	38	1.68
5.	Nonintellectual only	Nonintellectual only	17	3	10	1.70
6.	Nonintellectual only	Both	9	2	9	1.00
7.	Both	Intellectual only	70	12	44	1.59
8.	Both	Nonintellectual only	5	1	5	1.00
9.	Both	Both	3	^a	2	1.50
Total			580	99%	^b	^b

^a Less than 1 percent.

^b Data are nonadditive.

Generally speaking, colleges which participate in such studies are—more frequently than would be expected from their proportional representation in the universe of American colleges—coeducational colleges, those receiving public tax support, those with the highest enrollments, those with the lowest tuitions, and those with the highest ratios of applicants to freshmen. In contrast, those colleges that have participated in selection and guided-admission studies less frequently than would be expected are women's colleges, Catholic and religiously affiliated colleges generally, those with the smallest enrollments, and those with the smallest ratios of applicants to freshmen. These ecological portraits apply about as well to the colleges at which *nonintellectual* predictor studies are most frequently and least frequently conducted as they do to the colleges at which *intellectual* predictor studies are most and least frequently conducted. This fact would also seem to imply that the number of studies of nonintellectual factors will continue to rise sharply in the decade ahead, for such studies appeal to colleges with a tradition of empirical inquiry into the admission-selection process.

Prediction and Selection

Over 95 percent of the studies located were of the global type in method and goals. The term "global" here indicates use of general criteria of over-

all or comprehensive academic excellence or general desirability of one kind or another. The most frequently encountered examples of criteria were freshman-year grade average, first-semester grade average, and lower-classman grade average. In each case the criteria were based on all subject-matter areas, not focused on specific fields. Thus it may be said that most thinking was not only in terms of grades, but also in terms of the "over-all good" or "over-all poor" student.

Intellective Predictors: General Overview

The most obvious intellective predictor is the high-school record, usually expressed as total average grade or rank in class. For 263 studies in which it was employed, this measure correlated roughly .50 with comprehensive freshman-year intellective criteria. In 31 additional studies, it correlated .48 with comprehensive intellective criteria beyond the first year. But because secondary schools vary widely in standards, students, and curriculums, most colleges found it important to include some standardized aptitude and/or achievement tests in their selection measures. Among the most commonly used aptitude tests were (in decreasing order of incidence) the *Scholastic Aptitude Test (SAT)* of the College Entrance Examination Board, the *American Council on Education Psychological Examination for College Freshmen (ACE)*, and the *Ohio State University Psychological Examination (OSPE)*. Their correlations with comprehensive intellective criteria averaged .47. Several new aptitude tests which should see increased use were perfected.

Group intelligence tests such as the *Otis* were less commonly employed, because they have proved generally less satisfactory than tests geared more directly to the measurement of scholastic abilities. Achievement tests, such as the College Board series of one-hour examinations, the Cooperative Tests, the Iowa Tests of Educational Development, and various college-constructed tests were more often administered as placement devices than as selection instruments. (The distinction between aptitude and achievement tests became increasingly blurred as the test constructors became more skilled in developing achievement items which measure the ability to reason with facts.) Nevertheless, some achievement tests showed substantial correlations with global intellective criteria. Sixty-two studies of the relationship between scores on English or reading tests (Cooperative, Nelson-Denny) and freshman average produced results varying between .13 and .64, with a median correlation of .47. The College Board English Composition test showed a median correlation of .36 with the freshman average in 19 studies. Achievement tests (such as the Cooperative Tests in social studies or natural science, or the Iowa Tests) yielded results ranging from .03 to .74 in 84 predictions of freshman average, with a median correlation of about .45. Their median correlation with grades beyond the first year of college in 18 investigations was roughly .43.

Achievement tests were frequently applied to the prediction of grades in specific subject-matter courses. Grades seemed to be more difficult to predict than the global criterion, possibly because of the greater unreliability of a single grade.

There were many multiple-correlation studies. In 216 which employed only intellectual predictors, the multiple correlations with freshman average ranged from .37 to .83, with a median of .62. Eleven similar combinations resulted in correlations between .50 and .72 (median of .65) with grades beyond the freshman year.

The usual intellectual-predictor combination is an aptitude test plus the high-school record. The multiple correlations of these two predictors with the global college criterion ranged from .31 to .82, with a median of .64 in 24 analyses which did not utilize the College Board SAT. The College Board multiples extended from .34 to .82 (median of .61) for 147 studies predicting freshman average. In 21 studies which used an aptitude test and the high-school record, the multiple correlation was increased anywhere from .00 to .23, beyond the zero-order correlation based on high-school average alone, with a median rise of .07. In general, the use of any one intellectual predictor, or more than one, with the high-school record improved the forecast of freshman average in 181 studies by .00 to .38, with an average gain of .11. It seems useless, however, to employ more than two or three intellectual predictors, from both the point of view of practicality and that of efficiency.

Intellectual Predictors: Noteworthy Studies

The use of intellectual predictors in conjunction with intellectual criteria has largely become an atheoretical and routinized procedure. Nevertheless, even the tried and true procedures are not universally known. As a result, the period 1955-60 saw two serious attempts at an elementary exposition of the logic and the procedures of admission-selection studies (7, 19). There was evidence that the most ordinary procedures (for example, use of scores on standard aptitude or achievement tests plus the high-school average) could result in quite extraordinary multiple correlations with grade-point averages. However, it is noteworthy that the highest multiples reported (in the high .60's and .70's) were all obtained in Southwestern and Western colleges in which selective procedures were either so new or so restricted by statute that they had no effect on the range of applicant talent (3, 8, 22, 37, 44).

The enormous drop in multiple correlation as a result of preselection restrictions in the range of talent was demonstrated by Holland (31), whose highest multiple correlations were in the low .20's for the high-ability National Merit Scholarship Group. On the other hand, Davis (12) showed that when restriction is not overly great, the standard instruments and methods are adequate for sizable groups of lower academic

ability. Ahmann (1) demonstrated that these preadmission data supplemented by the earliest postadmission grades (first quarter average) can give adequate predictions of graduation versus nongraduation.

In a few cases somewhat more novel questions were considered in the context of the intellectual prediction of global intellectual criteria. Thus Clark reported that Southern Negro students from disadvantageous home and school environments who attended integrated Northern colleges functioned at a higher level than was predictable from their *Scholastic Aptitude Test* scores and high-school averages (10). This study had particular significance because of its implications for the reversibility of earlier impoverishment, given appropriate individual motivation and institutional interest. A different but equally refreshing question was investigated by Spaulding (51), who found that adequate predictions of freshman college performance could be obtained from ninth- and tenth-grade test scores and academic averages.

Fricke's review (26) of 27 studies was incidental to his conclusion that (a) statistical prediction was more accurate than clinical prediction of academic success and (b) high predictive accuracy was undesirable because it implied an inability on the part of the college to challenge good students or to help poor ones. According to this view, prediction researchers should be continually at work to improve their techniques while guidance and faculty personnel should be as constantly involved in reducing the efficiency of these same techniques via special guidance, tutoring, and incentive programs.

Fishman (15) amassed evidence concerning the independent and joint validity of various College Board tests and also provided information on the relationship between scores on these tests and various characteristics of students, schools, and colleges. Spindt (52) provided a thorough review of run-of-the-mill prediction studies of the last quarter century and of the principles and cautions that have been derived from such studies. Bloom and Peters (5) emphasized methods for increasing correlation between high-school grades and college averages. Bloom's methods—which have long been practiced by a few advanced investigators—entail statistical corrections for intraschool and interschool nonequivalence of grades. These simple methods clarify the real predictive power of high-school grades and suggest that less independent variance is available for nonintellectual predictors than has commonly been supposed. Bloom's work also reinforces the earlier arguments of those who have pointed to needed refinements in the college criterion as the next major target for further predictive improvement.

Nonintellectual Predictors: General Overview

Search for nonintellectual predictors was continuous. Surprisingly, some three score studies correlated nonintellectual predictors alone with an

intellective criterion of success. It must be assumed that most such efforts were exploratory studies, inasmuch as no college selects students solely on the basis of motivational and attitudinal characteristics of applicants.

The correlations of personality measures such as *Rorschach*, *Minnesota Multiphasic Personality Inventory (MMPI)*, *Manifest Anxiety Scale*, and others with global intellective criteria ranged from .01 to .62, with a median correlation of .22 for 26 studies. Study-habits tests and inventories (*Brown-Holtzman Survey of Study Habits and Attitudes*, local tests) correlated between .26 and .66 with college freshman grades. The median correlation for 25 studies was .47. Interest inventories, such as the *Kuder Preference Record* or the *Strong Vocational Interest Blank*, yielded lower correlations, .05 to .26, though only seven such studies were reported. Correlations with college grades for biographical information (socio-economic status, size of family, religion, size of community, campus activities, and living arrangements) ranged from .01 to .63, with a median of .13 for 23 studies. In nine studies based on ratings or interviews, zero-order correlations ranged from .26 to .77. (The very high figure of .77 represented counselor predictions of first-quarter grades.)

Few studies came to the point of combining intellective and nonintellective predictors by means of multiple-correlation techniques. Where this was done, the gain in multiple correlation attributable to the nonintellective predictor was discouragingly small. As a result, much of the literature on nonintellective predictors dealt with attempts to improve their technical and theoretical foundations.

Nonintellective Prediction: Noteworthy Studies

Two publications represented a theoretical revitalization of the non-intellective predictor area. The first was a preview of the Mellon Foundation studies at Vassar College conducted by Sanford and his colleagues (49). The second was a book-length report of several studies conducted by Stern, Stein, and Bloom at the University of Chicago (53). The former perceived the college years as a period of personality change and believed this change capable of differentiation into more and less desirable components with respect to the goals of a liberal-arts college. The latter sought to relate individual characteristics to institutional or classroom environments and processes so as to arrive at more tailor-made evaluations of individual performance. Taken together, these two approaches promised new instruments and new theoretical insights for the nonintellective prediction of college success. At this writing, however, the admission-selection promise inherent in these new approaches is still under investigation, although many researchers are now working to tease out operational implications along these very lines. The current literature dealing with nonintellective factors is still largely concerned with more fragmentary and less theoretically integrated studies.

In the intellectual-predictor area, interest has been focused upon operationally functional instruments within the context of mechanically scored, mass preadmission procedures. In the nonintellectual-predictor area, we are so far from having arrived at such instruments that investigators can still afford the luxury of "trying out" one or another technique or idea. The basic idea (or hope) underlying most work in the nonintellectual-predictor area is that some of a group of applicants of similar superior academic talents will be better able to apply their talents to college work than others, as a result of motivational, attitudinal, or personality factors. Another way of stating this position is to hypothesize that college grades should be more predictable from strictly intellectual predictors for those applicants with "facilitating" personality characteristics than for those with "interfering" personality characteristics. Hoyt and Norman (36) demonstrated the tenability of this hypothesis by a few simple *MMPI* contrasts, and Frederiksen and Melville (21) similarly used a novel combination of compulsiveness scores and *Strong Vocational Interest Blank* scores.

A large body of research is concerned with pinning down the above hypothesis for particular nonintellectual instruments with widespread clinical followings. One obvious contender is the *Rorschach*. Osborne (47) was among the first to reveal that a slight gain in multiple correlation (namely $+.04$) could indeed be obtained by addition of a multiple-choice version of the *Rorschach* to a test of academic ability. McArthur and King (41) introduced the worthwhile conceptual refinement of searching for distinct "*Rorschach* types" at various campuses, the implication being that the successful personality type at one campus might not be successful at another. Cooper (11) demonstrated a similar point by showing that yet another variant of the *Rorschach* had greater predictive value for the academic work of males than of females. However, work with the *Rorschach* did not progress to the point of advancing conceptually refined variables or syndromes of general interest for selection or guided admission. Another clinical instrument about which the same seemed to be true was the *MMPI*, although Frick (24) and Frick and Keener (25) demonstrated that it too can result in modest cross-validated gains, namely, $+.06$ in the multiple correlation.

The scales recently developed by Gough (particularly the *Hr* scale), by Taylor, and by Edwards have prompted a modest degree of experimentation in approximations to the admission-selection setting. Gough's claim that his *Hr* scale measured the self-sufficiency and independent judgment components of college-level intellectual functioning rather than intellect per se (29, 38) was tested by Klugh and Bendig (39) and subsequently by Bendig alone (4). In both instances, the *Hr* scale produced very minor gains beyond the values obtainable from classical intellectual measures alone. Taylor's *Manifest Anxiety Scale* was found to yield an even less independent contribution in these same two studies. On the other hand, Bendig concluded that the Need Achievement scale of Ed-

wards' *Personal Preference Schedule* did show a bit more promise, since the increase in multiple correlation (over the zero-order correlation based on an intellectual test alone) was $+.09$. It is important to point out, however, that in none of these studies (including those previously mentioned dealing with the *Rorschach* and the *MMPI*) was the easily available and always utilized high-school rank or average incorporated into the study designs.

Another popular area of inquiry was that concerned with study habits and related interests. Myers and Schultz (46) conducted an early study in this area and discovered that their measure produced a modest gain ($+.06$) when it was added to an intellectual-test predictor. However, when both the intellectual test and the high-school average were employed, scarcely any independent contribution was made by the experimental instrument. Unfortunately, a more recent investigation by Schutter and Maher (50) dealing with a forced-choice study-activity questionnaire did not similarly attempt to question their superficially large gains by incorporating both high-school average and intellectual-test scores in the study design.

A topic commanding considerable activity was the biographical inventory. Myers' early study (45) established that a biographical inventory could indeed make an independent contribution with an intellectual-test predictor, but it also demonstrated that this was hardly the case when the intellectual test was joined by the high-school average. Malloy's *Life Experience Inventory* (43) also yielded substantial gains over the use of intellectual-test predictors alone. Once more, it is unfortunate that the high-school average was not included in the design. If this had been done, it is likely that Malloy's findings would be the same as Myers'. The biographical inventory so ingeniously cross-validated by Anastasi, Meade, and Schneiders (2) has yet to be put to the test of being studied in an approximation to the admission-selection setting.

The repeated value of nonintellectual predictors in conjunction with high-school rank or average holds more than technical or even practical significance. On the one hand, it points to the tacit nonintellectual loading in high-school grades. On the other hand, it points to continuity in nonintellectual factors contributing to good high-school grades and to good college grades—at least for the kinds of nonintellectual factors thus far studied in admission-selection. Thus, there would seem to be a need for the clarification of nonintellectual variables, either in the individual or in the environment, that undergo marked change in the transition from high school to college. This point of view is theoretically elaborated by Fishman (20) on the basis of earlier work reported by Pace and Stern (48), Heist and Webster (30), and, most directly, Lazarsfeld and Barton (40).

It seems likely that the coming decade will bring us closer to a realization of the true potential in the nonintellectual-predictors area. However, it seems even more likely that whatever potential may exist will be recog-

nized by means of prior development of a solid theoretical foundation rather than by a shotgun "trying out" of instruments constructed for other purposes. When this day comes, it should also be possible to define the types of nonintellective factors that are not appropriately studied in a pre-admission (selection) context. Our goal must be not only to obtain as great a gain as possible from the addition of nonintellective predictors (9), but also to understand why we get the kinds of results we do, whether the gains be large or small.

Criterion Problems: Intellective and Nonintellective

The criterion problem is like the weather; everyone talks about it, but few try to do anything about it. No research and little theory construction were devoted to criteria of college success during the period under review. Academic grades and, to a less extent, achievement-test scores are strongly entrenched as the criteria of selection and guided admission in American higher education. This fact is greeted with joy by those whose educational philosophies are harmonious with it. It is greeted with dismay by the proponents of more subtle intellective criteria and nonintellective criteria.

Among the more subtle intellective criteria referred to above are those concerned with intellectuality in the personality. Many of the variables formulated by Sanford and his colleagues (49) at Vassar College and by McConnell and his colleagues (42) at the Center for the Study of Higher Education at Berkeley may be thought of as fusing or integrating the artificially separated intellective domains. It seems likely that the variables conceptually differentiated by these investigators can be validly measured and that their developmental course can be charted throughout the college years. However, whether or not they, or even some less revolutionary concepts such as postcollege interests and behaviors, can successfully challenge the criterion hegemony of course marks and achievement-test scores remains to be seen. Brown has shown that such newer criteria can be recognized by a college faculty but that many problems in the area of criterion reliability must still be tackled (6).

The prospect of newer and better criteria is exciting, as it offers fresh possibilities for relating the role of the college to the total development of the individual. However, in terms of selection and guided-admission procedures, the prospects raise a host of new problems—including that of whether or not it is defensible to select for college on other than intellective grounds. At the technical level, it is likely that nonintellective predictors will really come into their own when nonintellective criteria are available for them to aim at. On the other hand, this also implies the independent designation of predictor and criterion instruments or procedures in the nonintellective domain, and this designation has not yet been made. An attempt to deal with conflicting interests and difficult

technical problems in the criterion area was made by Fishman (18). Many additional attempts are needed.

Differential Prediction and Admission

The major difference between global and differential prediction is that, with the latter, the criterion is no longer an undifferentiated average but rather specific grades in specific courses or curriculums. This difference is not merely a technical one, since it is directly related to educational practices and institutional patterns. Those institutions which are more concerned with guided admission than with selection per se tend to be particularly attracted to the differential model. This model is also geared toward the educational philosophy which claims to be interested in the particular areas of excellence or insufficiency of each candidate rather than in his "average" excellence or insufficiency.

Horst (35), the major exponent of the differential-prediction model, reported on the general mathematical development which underlies his approach, as well as on its operational implementation (33, 34) and its educational and societal rationales (32). Recently, nonintellective test predictors have also been added to the battery of intellective and personal-background predictors which Horst originally employed. In addition to Horst, a few other investigators have utilized the differential-prediction approach. Unlike Horst, Stone (54) differentially predicted average grades in specific *curriculums* (commerce, education, physical sciences, and social sciences) rather than in different academic courses. Zeigler, Bernreuter, and Ford's goals (57) are identical with Horst's, although his mathematical operations are somewhat different. It is important to point out, in view of this similarity, that both Horst and Zeigler are operating in the context of a large and diversified state university program. Finally, somewhat different differential-prediction models have been developed by several investigators at Harvard (38, 55, 56) in conjunction with vocational-curricular guidance, and by French (23) in conjunction with test batteries assembled in accord with factor analytic considerations.

It is still too early to say whether the differential-prediction approach merits widespread adoption or even whether its adoption is feasible. On the one hand, the predictive efficiency obtained by these methods thus far is encouraging, but not startlingly so. On the other hand, this approach is operationally demanding in terms of the funds, numbers of applicants, and professional competence required for its implementation. It would seem to be particularly important to re-examine its claims in a period of considerable curriculum or applicant change, since either of these phenomena may undo the costly preparatory work upon which this technique rests at any given time. Dressel (13) has recently prepared a judicious, over-all review of the methods, assets, and disadvantages of the differential-prediction approach.

Conclusion

The increased interest of psychologists, social psychologists, and sociologists in higher education is a recent but welcome development. As a result, the philosophical and empirical problems related to selection and guided admission should, in due time, cease to be the undisputed preserve of psychometricians and directors of admission (14). Perhaps it is typically American that mass testing and the operational routinization of selection and admission have developed more fully than have consideration for the criteria or the educational-societal goals upon which selection and guided admission must rest. The new influx of intellectual forces in this area may reduce this imbalance by anchoring selection and guided admission in the philosophy of education at one end and in social-science theory and methods at the other. A few beginnings in this direction were made during the last decade (17, 42), and additional progress will undoubtedly take place.

Bibliography

1. AHMANN, JOHN STANLEY. "Prediction of the Probability of Graduation of Engineering Transfer Students." *Journal of Experimental Education* 23: 281-88; June 1955.
2. ANASTASI, ANNE; MEADE, MARTIN J.; and SCHNEIDERS, ALEXANDER A. *A Biographical Inventory: The Validation of a Biographical Inventory as a Predictor of College Success*. New York: College Entrance Examination Board, 1960. 82 p.
3. ANDERSON, MARY R., and STEGMAN, ERWIN J. "Predictors of Freshman Achievement at Fort Hays Kansas State College." *Educational and Psychological Measurement* 14: 722-23; Winter 1954.
4. BENDIG, ALBERT W. "Comparison of the Validity of Two Temperament Scales in Predicting College Achievement." *Journal of Educational Research* 51: 605-609; April 1958.
5. BLOOM, BENJAMIN S., and PETERS, FRANK R. *The Use of Academic Prediction Scales for Counseling and Selecting College Entrants*. Chicago: University of Chicago, Examiners Office, 1959. 89 p. (Mimeo.)
6. BROWN, DONALD R. "Non-Intellective Qualities and the Perception of the Ideal Student by College Faculty." *Journal of Educational Sociology* 33: 269-78; February 1960.
7. BURNHAM, PAUL S. "The Assessment of Admissions Criteria." *Journal of the Association of College Admissions Counselors* 4: 1-9; Winter 1959.
8. CARLSON, JOHN SPENCER, and MILSTEIN, VICTOR. "The Relation of Certain Aspects of High School Performance to Academic Success in College." *College and University* 33: 185-92; Winter 1958.
9. CHAHBAZI, PARVIZ. "Use of Projective Tests in Predicting College Achievement." *Educational and Psychological Measurement* 16: 538-42; Winter 1956.
10. CLARK, KENNETH B. "The Most Valuable Hidden Resource." *College Board Review* 29: 23-26; Spring 1956.
11. COOPER, JAMES G. "The Inspection Rorschach in the Prediction of College Success." *Journal of Educational Research* 49: 275-82; December 1955.
12. DAVIS, JUNIUS A., and OTHERS. *Distribution of 1957 Entering Freshmen on Pre-Admissions Indices*. Research Bulletin 2-58. Atlanta: University System of Georgia, Office of Testing and Guidance, 1958. 63 p. (Mimeo.)
13. DRESSSEL, PAUL L. *A Report on Differential Prediction and Placement in Colleges and Universities*. New York: College Entrance Examination Board, 1959. 17 p. (Mimeo.)
14. FISHMAN, JOSHUA A. "An Introduction to the Social-Psychology of School-to-College Transition." *Journal of Educational Sociology* 33: 249-51; February 1960.
15. FISHMAN, JOSHUA A. *1957 Supplement to College Board Scores No. 2*. New York: College Entrance Examination Board, 1957. 206 p.

16. FISHMAN, JOSHUA A. "Non-Intellective Factors as Predictors, as Criteria, and as Contingencies in the Selection and Guidance of College Students: a Socio-Psychological Analysis." *Proceedings of the Conference on Selection and Educational Differentiation*. (Edited by T. R. McConnell.) Berkeley: Field Service Center and Center for the Study of Higher Education, University of California, 1960. p. 55-73.
17. FISHMAN, JOSHUA A. "The Social-Psychology of School-to-College Transition." *Journal of Educational Sociology* 33: 249-304; February 1960.
18. FISHMAN, JOSHUA A. "Unsolved Criterion Problems in the Selection of College Students." *Harvard Educational Review* 28: 340-49; Fall 1958.
19. FISHMAN, JOSHUA A. "The Use of Quantitative Techniques to Predict College Success." *Admissions Information: The Preparation and Use of Admissions Data*. Vol. I. (Edited by College Entrance Examination Board.) New York: College Entrance Examination Board, 1957. p. 49-61.
20. FISHMAN, JOSHUA A. "The Use of Tests for Admission to College: The Next Fifty Years." *Long Range Planning for Education: A Report of the Twenty-Second Educational Conference*, New York City, October 31-November 1, 1957, Held Under the Auspices of the Educational Records Bureau and the American Council on Education. (Edited by Arthur Traxler.) Washington, D.C.: American Council on Education, 1957. p. 74-79.
21. FREDERIKSEN, NORMAN O., and MELVILLE, S. DONALD. "Differential Predictability in the Use of Test Scores." *Educational and Psychological Measurement* 14: 647-56; Winter 1954.
22. FREEHILL, MAURICE F. "The Co-Operative English Test in Academic Counseling." *College and University* 29: 244-52; January 1954.
23. FRENCH, JOHN W. *Comparative Prediction and Other Techniques for Use with a Guidance Battery*. Research Bulletin 55-4. Princeton, N.J.: Educational Testing Service, 1955. 38 p. (Multilithed)
24. FRICK, JAMES W. "Improving the Prediction of Academic Achievement by Use of the MMPI." *Journal of Applied Psychology* 39: 49-52; February 1955.
25. FRICK, JAMES W., and KEENER, HELEN E. "A Validation Study of Prediction of College Achievement." *Journal of Applied Psychology* 40: 251-52; August 1956.
26. FRICKE, BENNO G. "Prediction, Selection, Mortality, and Quality Control." *College and University* 32: 34-52; Fall 1956.
27. GARRETT, HARLEY F. "A Review and Interpretation of Investigations of Factors Related to Scholastic Success in Colleges of Arts and Science and Teachers Colleges." *Journal of Experimental Education* 18: 91-138; December 1949.
28. GOUGH, HARRISON G. "The Construction of a Personality Scale to Predict Scholastic Achievement." *Journal of Applied Psychology* 37: 361-66; October 1953.
29. GOUGH, HARRISON G. "What Determines the Academic Achievement of High School Students?" *Journal of Educational Research* 46: 321-31; January 1953.
30. HEIST, PAUL, and WEBSTER, HAROLD. "Differential Characteristics of Student Bodies: Implications for Selection and Study of Under-Graduates." *Proceedings of the Conference on Selection and Educational Differentiation*. (Edited by T. R. McConnell.) Berkeley: Field Service Center and Center for the Study of Higher Education, University of California, 1960. p. 91-106.
31. HOLLAND, JOHN L. "The Prediction of Scholastic Success for a High Aptitude Sample." *School and Society* 86: 290-93; June 1958.
32. HORST, PAUL. "Differential Prediction in College Admissions." *College Board Review* 33: 19-23; Fall 1957.
33. HORST, PAUL. "The Differential Prediction of Success in Various College Course Areas." *College and University* 31: 456-71; Summer 1956.
34. HORST, PAUL. "The Prediction of Academic Achievement in College." *College of Education Record*. Vol. 22, No. 3. Seattle: University of Washington, Bureau of Educational Research and School Services, 1956. p. 33-48.
35. HORST, PAUL. *A Technique for the Development of a Differential Prediction Battery*. Psychological Monographs: General and Applied, Vol. 68, No. 9. Whole No. 380. Washington, D.C.: American Psychological Association, 1954. 31 p.
36. HOYT, DONALD P., and NORMAN, WARREN T. "Adjustment and Academic Predictability." *Journal of Counseling Psychology* 1: 96-99; Summer 1954.
37. JEX, FRANK B. "University of Utah Studies in the Prediction of Academic Success." *University of Utah Salt Lake City Research Monographs in Education* 1: 1-51; 1957.

38. KING, RICHARD G. *The Prediction of Choice of Undergraduate Field of Concentration in Harvard College Through Multiple Discriminant Analysis*. Doctor's thesis. Cambridge, Mass.: Harvard University Press, 1958. 132 p.
39. KLUGH, HENRY E., and BENDIG, ALBERT W. "The Manifest Anxiety and ACE Scales and College Achievement." *Journal of Consulting Psychology* 19: 487; December 1955.
40. LAZARSFELD, PAUL, and BARTON, ALLEN. *The Measurement of Organizational Characteristics and Its Bearing on the Study of Colleges*. New York: College Entrance Examination Board, 1960. 63 p.
41. MCARTHUR, CHARLES C., and KING, STANLEY R. "Rorschach Configurations Associated with College Achievement." *Journal of Educational Psychology* 45: 492-98; December 1954.
42. McCONNELL, THOMAS R., editor. *Proceedings of the Conference on Selection and Educational Differentiation*. Berkeley: Field Service Center and Center for the Study of Higher Education, University of California, 1960. 187 p.
43. MALLOY, JOHN. "An Investigation of Scholastic Over- and Under-Achievement Among Female College Freshmen." *Journal of Counseling Psychology* 1: 260-63; Winter 1954.
44. MANUEL, HERSCHEL T. "Aptitude Tests for College Admission." *14th Yearbook of the National Council on Measurements Used in Education*. (Edited by Edith M. Huddleston.) Princeton, N.J.: the Council, 1957. p. 20-27.
45. MYERS, ROBERT C. "Biographical Factors and Academic Achievement: An Experimental Investigation." *Educational and Psychological Measurement* 12: 415-26; Autumn 1952.
46. MYERS, ROBERT C., and SCHULTZ, DOUGLAS G. "Predicting Academic Achievement with a New Attitude-Interest Questionnaire." *Educational and Psychological Measurement* 10: 654-63; Winter 1950.
47. OSBORNE, ROBERT T.; SANDERS, WILMA B.; and GREENE, JAMES E. "The Prediction of Academic Success by Means of 'Weighted' Harrower-Rorschach Responses." *Journal of Clinical Psychology* 6: 253-58; July 1950.
48. PACE, C. ROBERT, and STERN, GEORGE G. *A Criterion Study of College Environments*. Syracuse, N.Y.: Syracuse University Research Institute, Psychological Research Center, 1958. 104 p. (Mimeo.)
49. SANFORD, NEVITT, issue editor. "Personality Development During the College Years." *Journal of Social Issues* 12: 3-72; No. 4, 1956.
50. SCHUTTER, GENEVIEVE, and MAHER, HOWARD. "Predicting Grade-Point Average with a Forced-Choice Study Activity Questionnaire." *Journal of Applied Psychology* 40: 253-57; August 1956.
51. SPAULDING, GERALDINE. *Another Look at the Prediction of College Success: A Preliminary Report*. New York: Educational Records Bureau, 1960. 28 p. (Mimeo.)
52. SPINDT, HERMAN A. "Improvement in Prediction of Academic Success." *Proceedings of the Conference on Selection and Educational Differentiation*. (Edited by T. R. McConnell.) Berkeley: Field Service Center and Center for the Study of Higher Education, University of California, 1960. p. 15-29.
53. STERN, GEORGE G.; STEIN, MORRIS I.; and BLOOM, BENJAMIN S. *Methods in Personality Assessment: Human Behavior in Complex Social Situations*. Glencoe, Ill.: The Free Press, 1956. 271 p.
54. STONE, JOICS B. "Differential Prediction of Academic Success at Brigham Young University." *Journal of Applied Psychology* 38: 109-10; April 1954.
55. TATSUOKA, MAURICE M. *Joint-Probability of Membership and Success in a Group: An Index Which Combines the Information from Discriminant and Regression Analyses as Applied to the Guidance Problem*. Harvard Studies in Career Development, No. 6. Cambridge, Mass.: Harvard University Graduate School of Education, 1957. 117 p. (Mimeo.)
56. TIEDEMAN, DAVID. *The Harvard Studies in Career Development—Nature, Preliminary Results, Plans, Need*. Harvard Studies in Career Development, Working Paper, No. 5. Cambridge, Mass.: Harvard University Graduate School of Education, 1954. 43 p. (Duplicated)
57. ZEIGLER, MARTIN L.; BERNREUTER, ROBERT G.; and FORD, DONALD H. "A New Profile for Interpreting Academic Abilities." *Educational and Psychological Measurement* 18: 583-88; Autumn 1958.

CHAPTER III

The College Environment

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THIS ATTEMPT to deal with a new and vaguely defined topic is motivated by a variety of beliefs and events. First, the topic is important for future research. The concept of environment ranges in generality from the psychologist's idea of external stimuli or treatment to the anthropologist's idea of culture. One of the weaknesses of educational research has been the frequent effort to assess the impact of only a small segment of the learning environment—a particular class size or teaching method, for example. The results of such efforts are usually inconclusive or insignificant. A broader view of environment as a complex social system, a network of interactions, or, indeed, in the case of colleges, as a miniature culture, may lead to more productive research.

Second, in recent years a new group of behavioral scientists—sociologists, social psychologists, clinicians, and psychiatrists—has become active in studying higher education, supplementing and enriching with new concepts the past and continuing activities of educational testers and evaluators. Many reports reviewed here come from research groups or special projects which had interdisciplinary character and dealt with the college environment broadly: the Center for the Study of Higher Education at the University of California, the Bureau of Applied Social Research at Columbia University, the Mellon Foundation at Vassar College, special projects sponsored by the Hazen Foundation and by the American Council on Education, Cornell, Syracuse, and Yale Universities, the National Merit Scholarship Corporation, and the Association of American Medical Colleges.

Third, many specific studies primarily focusing on characteristics or changes in college students can be viewed as contributing some understanding of the college environment.

Fourth, descriptive studies, conceptual schemes, and research dealing with the characteristics and operations of organizations appeared with some frequency and offered suggestions for studies of college organizations and environments.

This chapter does not include static accounts of student or faculty or organizational characteristics. It encompasses research or concepts bearing on environment (in the anthropological sense), on studies of interaction between person and environment, and on studies which suggest environmental or institutional dimensions of demonstrated or potential value for research on the impact of college environments on college students.

Institutional Atmosphere

The Jacob Study (38) found little evidence that courses, curriculums, teaching methods, or faculty had much influence on changing students'

values. Jacob ascribed the peculiar potency of some colleges to a distinctive institutional atmosphere. There were colleges where students' scores on tests were typically high in some direction and where there were typically large changes in students in that direction from freshman to senior year. In a review of Jacob's report, Riesman (53) suggested that the absence of specific impact of colleges on many students was perhaps a tribute to their general effectiveness, in that "middle-brow" culture had been decidedly influenced by academic values. He also noted that the distinctive ethos of certain colleges might be simply a reflection of the already existing view of students who chose to attend them. Barton (2), carefully examining Jacob's report methodologically, observed a need to regard the college as a system of interacting elements, to study differences between types of colleges, and to specify effects on different types of students.

Dressel and Mayhew (16), reporting the American Council on Education's Cooperative Study of Evaluation in General Education, observed that in some schools students made high gains on the *Inventory of Beliefs* and on the tests of critical thinking in the natural and social sciences, whereas in other schools students' gains were small. In general, the high-gain schools had certain institutional characteristics which were absent in the low-gain schools.

The Cornell Values Study, reported by Goldsen and others (28), was not primarily comparative, but it ascribed many influences on students' activities and attitudes to the particular college cultures or to definite subcultures within college environment. Shifts in students' judgments during college about the importance of various educational goals were generally toward a higher valuation of academic goals and a lower valuation of vocational goals and interpersonal skills. The fraternity system was cited as a particularly influential reference group in many colleges, especially in respect to participation in campus activities, dating, drinking, cheating, and having a good time.

The importance of the over-all climate of the college was stressed by Eddy (19), who examined data from interviews and participant-observer notes at 20 colleges. He observed that in small, homogeneous colleges standards were influenced strongly by the total community, but that in more diversified colleges students sought out smaller reference groups. The character of the college was attributed to such elements as the level of expectancy of performance, the physical arrangement of the buildings, the effectiveness of communication among various campus groups, and the style of personal relationships between students and faculty or among the students. He concluded that a college had the greatest impact on its students when its components reinforced the major college goals.

Sanford (57) reported high lights of the Vassar College studies. Freedman (22) noted that the student body as an entity possessed characteristic qualities of personality which, like a culture, provided the basic context in which individual learning occurred. Brown (7) found that major types of college careers could be related to five patterns of college experience:

(a) social- and peer-group orientation, (b) overachievement, (c) underachievement with family orientation, (d) high achievement, and (e) search for identity.

In a series of studies on the sociology of medical education (46) edited by Merton, Reader, and Kendall, Thielens (62), comparing entrants to medical and law schools, found that differences in environments resulted in differences in students' perceptions. Other studies of medical education were edited by Gee and Glaser (24). Funkenstein (23) noted that the predominance of students with certain characteristics within a school determined to a great extent the atmosphere and opportunities in the school. Schools could be classified, he believed, as ideistic or pragmatic. In ideistic schools, students were concerned with self-understanding, abstract ideas, the arts, and literature; saw medicine as a cultural tradition; and were typically planning careers in research or teaching. In pragmatic schools, students emphasized concrete goals and economic and social prestige values and planned to become practitioners.

Reports from the Center for the Study of Higher Education by McConnell and Heist (43) and by Heist (32, 33) observed that the atmosphere of a college is fixed by the character of the student body. They documented the diversity of student characteristics by noting that institutional mean scores on the *ACE* in a stratified representative sample of colleges ranged from 35 to 143. Moreover, National Merit Scholarship students go with three to 15 times the expected frequency to schools which rate high on the *Knapp-Greenbaum* index of scholarly productivity. Thus, given the quality of students at certain colleges, it follows that these colleges will have a high productivity index. Samples of students equated for *Scholastic Aptitude Test* scores in 50 high-productive schools compared with those from 50 low-productive schools differed in respect to several of the scales on the *Omnibus Personality Inventory*. Equating for scholastic aptitude was not adequate assurance of the similarity of student bodies.

Drawing on previous studies by Stern, Stein, and Bloom (61), Pace and Stern (49) constructed a *College Characteristics Index* consisting of 30 10-item scales to measure environmental press, each scale designed as a counterpart of a personality need. In an analysis of 32 schools where both the *College Characteristics Index* and the *Stern Activities Index* had been given, Stern (60) found that the differences among institutional environments were substantially greater than the differences among student bodies. He also noted some tendency for students to be found at institutions where the environmental press was compatible with their personality needs.

Pace (48) reported a factor analysis of environmental-press variables in 32 colleges and a factor analysis of institutional similarity. Two bipolar factors accounted for most of the variance among the environmental-press variables: one was theoretical-intellectual versus practical, status-oriented; the other was group-welfare-oriented versus rebellious. The first factor, however, was separated into two parts, one emphasizing humanistic,

reflective, and sentient pressures and the other emphasizing pressures toward science, competition, and autonomy. The variables which grouped together across the sample of 32 colleges were also found to group together within individual colleges.

Using the *College Characteristics Index* and also a modified version of it, Thistlethwaite (63) found that certain scales were highly correlated with institutional productivity in natural sciences and other scales were highly correlated with institutional productivity in social sciences, arts, and humanities. The institutional productivity indexes were equated for initial talent-supply differences, so that the resulting correlations were presumably more clearly dependent upon environmental characteristics than upon student characteristics.

Wedge (64) described salient aspects of the Yale University undergraduate environment. In the same report of various Yale studies, Davie (15) noted that satisfaction, as a function of the interaction between student and environment, could be viewed in two ways: (a) with focus on the student's effort to satisfy needs as he manipulated the environment, satisfaction being interpreted as a measure of drive reduction, or (b) with focus on the environment as posing requirements to which the student must adjust, satisfaction being interpreted as a measure of fit. Rust (56), in another Yale study, found that three achievement groups (under, over, and normal) reported similar study habits in high school but quite different study habits in college. He hypothesized that achievement in college reflected a change in the environment which acted differentially on differences in personality and values existing prior to college entrance.

Faculty Subculture

Studying reactions of social-science faculty members in 165 colleges to matters of academic freedom, Lazarsfeld and Thielens (41) analyzed their data in various ways to reveal relationships among institutional characteristics. They found, for example, that conservative teachers were more oriented toward the institution which employed them, whereas permissive teachers (meaning critical-minded and tolerant of new ideas) were more oriented toward the profession at large. Permissive teachers were more likely to be productive scholars; the better the college, the more of its teachers were permissive. Also, the better the college, the better its administration protected the faculty.

Caplow and McGee (9) noted a similar dimension in faculty characteristics—orientation to the discipline versus orientation to the local institution. This dimension corresponded to research versus teaching, mobility versus immobility, and high prestige versus low.

In an analysis of manifest and latent social roles, Gouldner (29, 30) described faculty members as cosmopolitans and locals, terms derived

from Merton (45). Cosmopolitans were low on loyalty to the organization, high on commitment to their special skills, and tended to have an outer-reference-group orientation.

Eckert and Stecklein (17) and Eckert, Stecklein, and Sagen (18) observed that personal interests and motivation were influential in attracting people to college teaching—interest in the subject matter, the intellectual challenge of the job, or the desire to work with college students. Nevertheless, half the sample of faculty members studied felt that they had come into the profession more or less by accident. These authors, as well as Farber and Bousfield (21), found a majority of college teachers coming from low socioeconomic backgrounds.

Hemphill (34) developed a *Group Dimensions Questionnaire* for specifying the characteristics by which differences among groups may be described. Descriptions of 19 college departments by 130 faculty members in one university showed that these groups were high in the characteristics of stratification, potency, participation, and hedonic tone. They were low in homogeneity, permeability, control, and viscosity.

Images

Holland (36, 37) studied students' explanations of college choice and parental expectations about college. In answer to a question about what aspects of a college made it "best," parents of National Merit Scholars listed quality of faculty, scholastic standards, curriculum, reputation, and facilities. In the actual choice of college, practical and financial factors were of substantial influence, academic factors playing a moderate, secondary role.

From Coleman's study (11) of high-school climates, Cutright (12) concluded that the school atmosphere exerted some impact on the motivation of students to attend college, but, except for girls, this was not realized in actual college attendance. Brown (6), Fager (20), and Schuhle (58) dealt with faculty or student conceptions of ideal students or academic ideals, generally discovering only moderate differences of opinion. Kerins (40) argued that conflict between students and administrators was inevitable and desirable.

Student Subculture

Siegel and Siegel (59) found that the greatest changes in students' attitudes in respect to authoritarianism and status occurred when they took an imposed, initially nonpreferred membership group (an assigned college dormitory) as their reference group. Rogers (54) documented reference-group influences on student drinking behavior. Brown and Bystryn (8) studied the impact on authoritarian attitudes of minority

groups at three colleges—a small Eastern liberal arts college, a large Eastern university, and a Catholic women's college—and found that the challenge to existing authoritarianism was greatest at the small non-denominational liberal arts college. Glicksberg (26) analyzed students' essays on cheating, noting that an impersonal atmosphere, plus a college emphasis on competition for success, fostered cheating.

Davie and Hare (14) concluded that the peer culture was the most important single external factor in the students' experience at "Ivy." The small and relatively homogeneous student body led to group solidarity, which was reinforced by geographical isolation, the absence of motor cars, and dormitory life. Birney and Taylor (4) hypothesized that orientation to college increased with experience as the individual discovered the sources of reinforcement which coincided with his ability and talent.

Heath (31) described four types of students at Princeton and suggested that different educational experiences and approaches were probably needed to reach them effectively. McArthur (42) found many personality variables and reactions to college life related to public versus private school attendance, or, more generally, to the school-family-class subculture. Miller (47) reported changes in religious values of students from freshman to senior year at one college, finding that all students changed but that the average scores were nearly identical. Wise (65) summarized data on the characteristics of college students and pointed out ways in which the college climate today differs from that of previous generations.

Organization, Structure, and Theory

Goffman (27) described the characteristics of total institutions, such as homes for the aged, mental hospitals, and jails. Among the totalistic features were the breakdown of distinctions among play, work, and sleep places; sets of coparticipants, and different authorities; and such features as mortification processes, privilege systems, standard social processes, varieties of adaptation alignments, and institutional ceremonies. Dornbusch (15) noted the process of isolation, identification with new role, and change in self-conception in the assimilating characteristics of a military academy. Becker and Geer (3) saw the formation of student cultures in a medical school as helping students accommodate to the facts of life of the school and as providing conditions for considerable deviation from formal roles. Page (50) commented on the growth of bureaucracy in higher education. Henry (35), analyzing types of institutional structure in psychiatric hospitals, concluded that if certain properties, such as autonomy and detachment, were desired in a system, a specific type of structure had to be devised to produce them.

Attempts to analyze organizations—as in industry, management, or bureaucracy—generally resulted in descriptive or propositional, rather

than dynamic, models: March and Simon (44), Presthus (52), Parsons (51). Argyris (1), however, emphasized the incongruity between the needs of mature personalities and the requirements of formal organizations. Getzels and Guba (25) ascribed two classes of phenomena to a social system: (a) institutions with certain roles and expectations that will fulfill social goals and (b) individuals with certain need dispositions inhabiting the system. They made a useful distinction among the concepts of effectiveness, efficiency, and satisfaction: (a) effectiveness is the congruence of behavior with role expectations, (b) efficiency is the congruence of need dispositions with behavior, and (c) satisfaction involves congruence of need dispositions and role expectations.

The concepts of role expectations and reference groups were prominent in the Merton studies of medical education (46) previously cited. The transition from student to physician was seen as the adoption of a perceived role. Application of role theory to the study of liberal-arts-college environments would appear to depend on the clarity with which the roles presented by the college can be defined.

Brim (5) considered the major problems of institutional analysis under five headings: (a) aims, (b) allocation of materials, (c) allocation of personnel, (d) roles, and (e) functions. Clark (10), in a case study of a junior college, emphasized the importance of the administrative setting of a college in relation to clientele and community as a broad determinant of its character. Kelley (39) proposed that a college was a culture matrix which included three interactive elements: (a) the culture the student brings to the campus, (b) the traditional and established culture of the college community, divided into administrative mores and student mores, and (c) the material structure and physical equipment of the college campus.

From the studies of college environments reviewed here, it is clear that a variety of concepts have been useful—such as role, reference group, interaction system, press, and congruence. Recurrent dimensions have included the following: (a) cosmopolitan-local, permissive-conservative; (b) theoretical-practical, status, ideistic-practical; (c) humanistic, practical, social press, and Rosenberg's (55) major dimensions of students' occupational interests as people-oriented, extrinsic-reward-oriented, and self-expression-oriented. Other recurrent dimensions may emerge from further research. No general theory has yet found wide acceptance.

Some studies have shown the importance of student characteristics in setting the tone of a college; other studies have shown the influence of environmental characteristics in changing students' behavior. What happens to similar students in contrasting environments and to contrasting students in the same environment needs further exploration.

College environments which have some conflict between parts and some over-all harmony, but not too much of either, may be most educative. A theory which includes concepts of limits, balance, and movement may be needed.

Bibliography

1. ARGYRIS, CHRIS. *Personality and Organization: The Conflict Between System and the Individual*. New York: Harper & Brothers, 1957. 291 p.
2. BARTON, ALLEN H. *Studying the Effects of College Education: A Methodological Examination of Changing Values in College*. New Haven: The Edward W. Hazen Foundation, 1959. 96 p.
3. BECKER, HOWARD S., and GEER, BLANCHE. "Student Culture in Medical School." *Harvard Educational Review* 28: 70-80; Winter 1958.
4. BIRNEY, ROBERT C., and TAYLOR, MARC J. "Scholastic Behavior and Orientation to College." *Journal of Educational Psychology* 50: 266-74; December 1959.
5. BRIM, ORVILLE G., JR. *Sociology and the Field of Education*. New York: Russell Sage Foundation, 1958. 93 p.
6. BROWN, DONALD R. "Non-Intellective Qualities and the Perception of the Ideal Student by College Faculty." *Journal of Educational Sociology* 33: 269-78; February 1960.
7. BROWN, DONALD R. "Some Educational Patterns." *Journal of Social Issues* 12: 44-60; No. 4, 1956.
8. BROWN, DONALD R., and BYSTRYN, DENISE. "College Environment, Personality, and Social Ideology of Three Ethnic Groups." *Journal of Social Psychology* 44: 279-88; November 1956.
9. CAPLOW, THEODORE, and MCGEE, REECE J. *The Academic Marketplace*. New York: Basic Books, 1958. 262 p.
10. CLARK, BURTON R. *The Open Door College: A Case Study*. New York: McGraw-Hill Book Co., 1960. 207 p.
11. COLEMAN, JAMES S. "The Adolescent Subculture and Academic Achievement." *American Journal of Sociology* 65: 337-47; January 1960.
12. CUTRIGHT, PHILIP. "Students' Decision to Attend College." *Journal of Educational Sociology* 33: 292-99; February 1960.
13. DAVIE, JAMES S. "Satisfaction and the College Experience." *Psychological Problems of College Men*. (Edited by Bryant M. Wedge.) New Haven, Conn.: Yale University Press, 1958. Chapter 2, p. 15-44.
14. DAVIE, JAMES S., and HARE, A. PAUL. "Button-Down Collar Culture: A Study of Undergraduate Life at a Men's College." *Human Organization* 14: 13-20; Winter 1956.
15. DORNBUSCH, SANFORD M. "The Military Academy as an Assimilating Institution." *Social Forces* 33: 316-21; May 1955.
16. DRESSSEL, PAUL L., and MAYHEW, LEWIS B. *General Education: Explorations in Evaluation*. Washington, D.C.: American Council on Education, 1954. 302 p.
17. ECKERT, RUTH E., and STECKLEIN, JOHN E. "Why Teach in College?" *NEA Journal* 47: 120; February 1958.
18. ECKERT, RUTH E.; STECKLEIN, JOHN E.; and SAGEN, H. BRADLEY. "College Faculty Members View Their Jobs." *Association of American University Professors Bulletin* 45: 512-28; December 1959.
19. EDDY, EDWARD D., JR. *The College Influence on Student Character: An Exploratory Study in Selected Colleges and Universities Made for the Committee for the Study of Character Development in Education*. Washington, D.C.: American Council on Education, 1959. 185 p.
20. FAGER, ROBERT E. "Student and Faculty Conceptions of the 'Successful Student'." *Journal of Counseling Psychology* 5: 98-103; Summer 1958.
21. FARBER, MAURICE L., and BOUSFIELD, WESTON A. "College Teaching as A Profession." *Journal of Higher Education* 29: 70-72; February 1958.
22. FREEDMAN, MERVIN B. "The Passage through College." *Journal of Social Issues* 12: 13-28; No. 4, 1956.
23. FUNKENSTEIN, DANIEL H. "The Implications of Diversity." *The Ecology of the Medical Student*. (Edited by Helen Hofer Gee and Robert J. Glaser.) Evanston, Ill.: Association of American Medical Colleges, 1958. p. 34-58.
24. GEE, HELEN HOFER, and GLASER, ROBERT J., editors. *The Ecology of the Medical Student*. Evanston, Ill.: Association of American Medical Colleges, 1958. 262 p.
25. GETZELS, JACOB W., and GUBA, EGON G. "Social Behavior and the Administrative Process." *School Review* 65: 423-41; December 1957.

26. GLICKSBERG, CHARLES I. "Student Ethics and the Honor System." *School and Society* 85: 181-83; May 25, 1957.
27. GOFFMAN, ERVING. "Characteristics of Total Institutions." *Symposium on Preventive and Social Psychiatry*. Walter Reed Army Institute of Research, Walter Reed Army Medical Center. Washington, D.C.: Superintendent of Documents, Government Printing Office, 1958.
28. GOLDSSEN, ROSE K., and OTHERS. *What College Students Think*. Princeton, N.J.: D. Van Nostrand Co., 1960. 240 p.
29. GOULDNER, ALVIN W. "Cosmopolitans and Locals: Toward an Analysis of Latent Social Roles—I." *Administrative Science Quarterly* 2: 281-306; December 1957.
30. GOULDNER, ALVIN W. "Cosmopolitans and Locals: Toward an Analysis of Latent Social Roles—II." *Administrative Science Quarterly* 2: 444-80; March 1958.
31. HEATH, S. ROY. "The Reasonable Adventurer and Others—A Two Factor Model of Ego Functioning." *Journal of Counseling Psychology* 6: 3-12; Spring 1959.
32. HEIST, PAUL A. "Diversity in College Student Characteristics." *Journal of Educational Sociology* 33: 279-91; February 1960.
33. HEIST, PAUL A. "Implications from Recent Research on College Students." *Journal of the National Association of Women Deans and Counselors* 22: 116-24; April 1959.
34. HEMPHILL, JOHN K. *Group Dimensions: A Manual for Their Measurement*. Columbus: Bureau of Business Research, College of Commerce and Administration, Ohio State University, 1956. 66 p.
35. HENRY, JULES. "Types of Institutional Structure." *Psychiatry* 20: 47-60; February 1957.
36. HOLLAND, JOHN L. "Parental Expectations and Attitudes about College." *College and University* 34: 70; Winter 1959.
37. HOLLAND, JOHN L. "Student Explanations of College Choice and their Relation to College Popularity, College Productivity, and Sex Differences." *College and University* 33: 313-20; Spring 1958.
38. JACOB, PHILIP E. *Changing Values in College: An Exploratory Study of the Impact of College Teaching*. New York: Harper & Brothers, 1957. 174 p.
39. KELLEY, JANET A. *College Life and the Mores*. New York: Bureau of Publications, Teachers College, Columbia University, 1949. 308 p.
40. KERINS, FRANCIS J. "Student Autonomy and Administrative Control: The Fallacy of Absolute Co-operation between Student and Administrator." *Journal of Higher Education* 30: 61-66; February 1959.
41. LAZARSFELD, PAUL F., and THIELENS, WAGNER, JR. *The Academic Mind: Social Scientists in a Time of Crisis*. Glencoe, Ill.: The Free Press, 1958. 460 p.
42. MCARTHUR, CHARLES C. "Sub-Culture and Personality During the College Years." *Journal of Educational Sociology* 33: 260-68; February 1960.
43. MCCONNELL, THOMAS R., and HEIST, PAUL A. "Do Students Make the College?" *College and University* 34: 442-52; Summer 1959.
44. MARCH, JAMES G., and SIMON, HERBERT A. *Organizations*. New York: John Wiley & Sons, 1958. 262 p.
45. MERTON, ROBERT K. *Social Theory and Social Structure*. Revised. Glencoe, Ill.: The Free Press, 1957. 645 p.
46. MERTON, ROBERT K.; READER, GEORGE G.; and KENDALL, PATRICIA L., editors. *The Student Physician: Introductory Studies in the Sociology of Medical Education*. Cambridge, Mass.: Harvard University Press, 1957. 360 p.
47. MILLER, ELEANOR O. "Nonacademic Changes in College Students." *Educational Record* 40: 118-22; April 1959.
48. PACE, C. ROBERT. "Five College Environments." *College Board Review* 41: 24-28; Spring 1960.
49. PACE, C. ROBERT, and STERN, GEORGE G. "An Approach to the Measurement of Psychological Characteristics of College Environments." *Journal of Educational Psychology* 49: 269-77; October 1958.
50. PAGE, CHARLES H. "Bureaucracy and Higher Education." *Journal of General Education* 5: 91-100; January 1951.
51. PARSONS, TALCOTT. "Suggestions for a Sociological Approach to the Theory of Organizations—I." *Administrative Science Quarterly* 1: 63-85; June 1956.
52. PRESTHUS, ROBERT V. "Toward a Theory of Organizational Behavior." *Administrative Science Quarterly* 3: 48-72; June 1958.

53. RIESMAN, DAVID. "The 'Jacob Report'." *American Sociological Review* 23: 732-38; December 1958.
54. ROGERS, EVERETT M. "Reference Group Influences on Student Drinking Behavior." *Quarterly Journal of Studies on Alcohol* 19: 244-54; June 1958.
55. ROSENBERG, MORRIS. *Occupations and Values*. Glencoe, Ill.: The Free Press, 1957. 158 p.
56. RUST, RALPH M. "Personality and Academic Achievement: A Questionnaire Approach." *Psychosocial Problems of College Men*. (Edited by Bryant M. Wedge.) New Haven, Conn.: Yale University Press, 1958. Chapter 3, p. 45-62.
57. SANFORD, NEVITT, issue editor. "Personality Development During the College Years." *Journal of Social Issues* 12: 3-72; No. 4, 1956.
58. SCHUHLE, WILLIAM. "Teacher's Understanding of Students' Academic Ideals." *Journal of Higher Education* 28: 388-91, 408; October 1957.
59. SIEGEL, ALBERTA E., and SIEGEL, SIDNEY. "Reference Groups, Membership Groups, and Attitude Change." *Journal of Abnormal and Social Psychology* 55: 360-64; November 1957.
60. STERN, GEORGE G. "Congruence and Dissonance in the Ecology of College Students." *Student Medicine* 8: 304-39; April 1960.
61. STERN, GEORGE G.; STEIN, MORRIS I.; and BLOOM, BENJAMIN S. *Methods in Personality Assessment*. Glencoe, Ill.: The Free Press, 1956. 271 p.
62. THIELENS, WAGNER, JR. "Some Comparisons of Entrants to Medical and Law Schools." *The Student Physician: Introductory Studies in the Sociology of Medical Education*. (Edited by Robert K. Merton, George G. Reader, and Patricia L. Kendall.) Cambridge, Mass.: Harvard University Press, 1957. p. 131-52.
63. THISTLETHWAITE, DONALD L. "College Press and Student Achievement." *Journal of Educational Psychology* 50: 183-91; October 1959.
64. WEDGE, BRYANT M., editor. *Psychosocial Problems of College Men*. New Haven, Conn.: Yale University Press, 1958. 291 p.
65. WISE, WILLIAM MAX. *They Come for the Best of Reasons: College Students Today*. Washington, D. C.: American Council on Education, 1958. 66 p.

CHAPTER IV

The Outcomes of College

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THIS CHAPTER will consider the factors underlying the mortality and survival of college students, the changes both cognitive and affective in these students, and the permanence of these changes.

Why many students do not finish their college work has been investigated many times over. That it is a problem is evident from the amount of effort expended in studying it, but why it is a problem is not so clear. Perhaps we assume that an individual's education is not complete unless he has followed to the end a specified program of study. Viewing mortality and survival from the institution's viewpoint, the problem is one of determining the number and characteristics of students who do not get through to the end. From the individual's viewpoint, it seems to be whether he completes that part of the educational program which makes sense to him. Most research on mortality and survival is done from the institutional viewpoint.

The most comprehensive investigation was made by Iffert (22) for the U.S. Office of Education. Iffert's study should serve for some time as the basic reference for empirical and theoretical investigations of student mortality and survival in higher education. From data on students who began at 149 institutions in 1950, it attempted to answer three major questions: (a) What is the rate of student dropout in relation to type of institution, economic status of family, motivation of student, academic performance, amount of self-help, participation in extracurricular activities, and residence of the student? (b) What reasons do students give for transferring to other institutions and for discontinuing college attendance? (c) What implications do the characteristics of students and their mobility have for higher educational institutions with reference to recruitment, selection, admission, counseling, instruction, scholarship, and other functions?

Iffert found that about 40 percent of freshman entrants graduated from the institution originally chosen during four years (1950-54). Fifty-one percent graduated from the same or some other institution in that period. He estimated that approximately 60 percent graduated or will graduate from some institution. Forty-two percent of the entrants, however, completed no more than two years, and 27 percent completed no more than one year. The proportion of graduates to initial enrollees was higher for the privately controlled institutions than for the publicly controlled, and higher for technological schools than for teachers colleges.

Iffert reported on the relation between persistence and reasons given for going to college. He also reported the relation between persistence levels and student reactions to college facilities and services. Students who changed interests in college proved more likely to graduate than did stu-

dents who maintained the same interest. Students who maintained interest in a subject field distinctly occupational in character had higher persistence and graduation rates than those whose interests lay in nonoccupational fields. The most frequent reasons given for transfer to another college were general dissatisfaction and change in curricular interest. "Low grades" was sixth on the list of reasons given for transfer.

Fullmer (16), studying records at the University of Denver of students who changed their major fields, found that 48 percent graduated, as compared with 32 percent of those who did not change their major fields. Students who changed were as successful academically as those who did not change, and their grades after the change were not significantly different from their grades before. These findings agreed with Iffert's. Fullmer concluded that changing educational objectives does not indicate weakness on the part of the student.

In a study of dropouts at the end of the freshman year, Yoshino (50), at the University of Arizona, found significantly lower high-school grade point averages and *ACE* Psychological examination scores for dropouts than for those who continued as sophomores. The most frequent reasons given for dropout were: lack of preparation in high school, inadequate finances, no clear-cut field of interest, poor study habits, lack of interest in required courses, and marriage. He concluded that 42 percent of dropouts could not meet academic requirements, and the remainder dropped out for economic, social, or personal reasons. There was, however, no single simple and absolute reason; rather, many factors were related in many ways.

Bragg (3) found that 58 percent of students dropped out of "W. U." during the first two years. High-school averages and first-semester grades of the dropouts were significantly lower than those of the continuing students, and a significantly larger number were at the twentieth percentile or lower on the *ACE* Psychological *L* score and on Cooperative English test score.

Holmes (21), studying 75 students who withdrew voluntarily during or at the end of the freshman year in the College of Liberal Arts at Syracuse University, found two-thirds dissatisfied with food and one-quarter dissatisfied with housing arrangements. Only 30 percent were satisfied with academic counseling, and 50 percent had negative feelings about the counseling system. Twenty percent were dissatisfied with classroom instruction and personal contact with faculty. Eighty-four percent of Holmes' respondents transferred to another college, usually nearer home.

Grace (18), approaching personality factors and college attrition differently, gave *Minnesota Multiphasic Personality Inventory (MMPI)* scales to two groups of students (107 withdrawals and 107 continuing students) matched as to scholastic aptitude. The *MMPI* scales were scored for responsibility-irresponsibility and for dependence-independence. The highest proportion of withdrawals was classified as irresponsible-dependent. Next in proportion were irresponsible-independent and responsible-dependent. The lowest proportion of withdrawals was among the students classified as

responsible-independent. These trends held for both males and females. Grace concluded that independence, responsibility, and manifest anxiety are clearly relevant to college attrition. This study should lead to more penetrating studies of mortality and survival.

Some suggestions may be drawn from Slater's attempt (42) to develop a theoretical context for research on persistence and attrition among college men. Slater identified four types of student perceptions about college: (a) as a means to a specific job, (b) as a resource for personal intellectual development, (c) as a means to a degree, and (d) as contributing to no clear academic purpose or goal. He differentiated among college curriculums: (a) courses to develop highly skilled practitioners and (b) courses to develop well-informed and intellectually resourceful individuals. Developing hypotheses and predictions about the consequences of combining students having various perceptions with different colleges and curriculums, Slater provided a provocative framework for research on a problem which has too long been limited to survey methods and the more obvious approaches to differences in scholastic aptitude and achievement. The framework has yet to be put to empirical test.

Changes in Information and Intellectual Abilities

Almost every statement of educational objectives for higher education includes reference to changes in information and problem solving. Attitude, value, and personality changes are less frequently named. The evidence on such changes is summarized in the third part of this section. There is no clear evidence that the college environment and the college curriculum make a real impact on values and personality. It is encouraging, nevertheless, to note the amount and quality of research which seeks evidence in this very complex aspect of individual development.

The contrasting assumption that higher education increases the individual's fund of information and the quality of his intellectual abilities and skills rests on evidence collected over the years by tests and observations. That students possess more information and greater facility in attacking cognitive problems at the end of a course or curriculum than they had at the beginning has been so well demonstrated that this fact perhaps explains the recent paucity of research in this direction. Jacob (23), studying changing values in college, summarized the major research which demonstrates that statistically significant gains are found in some colleges on tests of critical thinking which are given as pre-tests and then as retests after one or more years of general education. Beyond this, one must turn to studies of methods of instruction—such as TV or large-class, discussion or lecture—for research which bears on this topic.

Buckler (5) reported significant gains in theme writing and in English fundamentals for both television and control sections of a two-semester English course at New York University. The themes were graded by the Educational Testing Service. Macomber and Siegel (29) used themes writ-

ten at the beginning and the end of a semester of composition and literature instruction. The themes were graded by readers on mechanics, organization, content, and effectiveness of sentence and diction. While the majority of comparisons between pre- and post-tests found gains for the large-class instruction significant, few were significant for the control or regular-instruction groups. Clearly significant gains were not always in evidence the first semester, but were still fewer over the second semester of instruction. Macomber and Siegel were primarily interested in comparing large-class and small-class instruction—which did not show significant differences. The evidence that one or two semesters makes a significant difference in quality of writing is far from clear in this study.

Dreher and Beatty (10) found significant improvements in student scores on subject-matter tests in introductory psychology, economics, and basic communications in the control or normal course presentation, but no significant differences between the television and control sections.

Changes in Personality

It is now generally realized that cognitive and intellectual aspects of personality are functionally related to affective or motivational states. Although the relationships may be indirect or obscure, aptitudes and abilities are related to attitudes and values. Numerous studies found authoritarian attitudes to be correlated negatively with intelligence. Kagan and others (24) found differences in motivation between children who gained and those who lost in IQ over four years. Other examples could be cited. The discussion of the development of college students is here limited to personality changes which are primarily noncognitive or nonintellective in nature. Similar summaries by Lehmann (26) and by Norman and Tomlinson (36) appeared previously in the REVIEW.

Cooper (8) and Mayhew (32) each commented on the dearth of precise educational research; the number of studies which were primarily empirical, or which employed actual measurements, was strikingly small. It was not surprising, therefore, to find precise *longitudinal* studies of college students even fewer. Moreover, interpretations of observed longitudinal changes usually ignored the effects of changes in general social conditions and the more immediate effects of various college cultures or subcultures on the development of students. This narrowness of interpretation (in some cases partly justified by actual research limitations) necessarily limits our understanding of student development. Accordingly, this section is not restricted to reports of test-retest changes; it discusses some research which has employed other—less precise, but usually more general—approaches.

The Educational Process

There was increasing awareness of the complexity of the educational process from the time the student enters college until well after graduation;

for example, McConnell and Heist (30) described the diversity among entering students in numerous institutions on college aptitude test scores and on measurable personality characteristics. The variations, both within and among institutions, suggest that it is unreasonable to expect the same personality changes to occur within all college cultures or among all students at one school.

As Stern (43) observed, after the student has entered college, his development becomes an ecological problem in which initial personal characteristics interact with the college environment. Stern, Stein, and Bloom (44) were perhaps first to note that stereopaths (authoritarians) tend to withdraw, in greater numbers than nonstereopaths, from a liberal-arts program which emphasizes intellectual values. Importance of the authoritarian syndrome continued to increase in educational research. Using the *E* scale, a measure of ethnocentrism, Plant (38) compared students who withdrew voluntarily from San José State College with those who remained in school. Groups were initially matched on intelligence and ethnocentrism. Over a two-year period, students who remained in college became significantly less ethnocentric, whereas those who withdrew did not. Plant (37) later retested 86 percent of a senior class, who had also been tested with the *E* scale as freshmen, and found that a significant decrease in ethnocentrism had occurred. Freedman (15) and Webster (47) reported the same change in longitudinal samples of Vassar College students. Apparently education decreases ethnocentrism—in those students who choose to remain in college.

Further Studies of Authoritarianism

A number of studies reported by Dressel (11) and his colleagues, on 11 years of research aimed at evaluation of the basic liberal-arts program at Michigan State University, have a direct bearing on personality change or development in undergraduates. For example, Mayhew and Warrington (34) found that students who successfully accelerated, by substituting examinations for courses, were usually nonauthoritarians, as revealed by an *Inventory of Beliefs*. Degree of participation in extracurricular activities was unrelated to acceleration, although nonaccelerating students more often joined fraternities and sororities. Mayhew (33) concluded, from a number of studies, that even though personality traits measured by the *Inventory of Beliefs* were relatively stable and probably deeply embedded, they were nevertheless modified during college—"whether it be by education, maturation, or just getting away from home we do not know" (p. 230).

Dressel and Mayhew (12) discussed some implications for improving the education of rigid or authoritarian students; in general, the latter were less autonomous than nonauthoritarian students, and therefore needed more supervision in course work. Gladstein (17) found that gifted, successful students attending the University of Chicago and Syracuse University differed in study habits and activities, depending upon whether they were stereopaths or nonstereopaths. An analysis by Lehmann and Ikenberry

(27) of pre- and post-test results for a large sample of students still enrolled in the spring term (after a period of eight months) at Michigan State University revealed significant changes, for both sexes, in the directions of less stereotyping in attitudes, more emergent values, and increased critical thinking.

Del Popolo (9) found the classroom behavior of student teachers attending a New York college related to scores on an authoritarianism scale, the *A* scale, which was derived from a similar scale used at Vassar College; in addition, classroom behavior and *A* scores were significantly correlated, as predicted, with scores on the *Minnesota Teacher Attitude Inventory (MTAI)*. All 366 students of a pilot study group, an experimental group, and a control group, pre-tested at the beginning of the sophomore year, were tested again at the end of the junior year. High critical ratios were reported for all comparisons of high-scorers with low-scorers on the classroom-behavior checklist; these ratios were higher for the *A* scale than for the *MTAI*, and this was also the case for the longitudinal comparisons within both experimental and control groups.

Attitudes and Knowledge

A few studies found the attitudes of students unrelated to knowledge or achievement. Mayhew (33) noted that, in the absence of knowledge of a defensible means of influencing students' attitudes, instructors typically assume that attitude changes result merely from changes in knowledge and understanding. In one experiment (p. 220), students who had completed the general-education course, *Effective Living*, were found by pre- and post-testing to have shifted in attitude in a desirable direction; that is, they moved toward belief in the value of majority decisions, increased in criticalness of authority, subscribed to active participation (on a social issue), gained in respect for the general welfare of others, and gained in catholicity of interests, open-mindedness, and responsibility. Dahnke (11, p. 226) found attitude changes during the *Effective Living* course unrelated to growth of knowledge in the course; Mayhew saw this finding as bringing into question the way in which attitudes are to be affected if they are in fact unrelated to knowledge.

The Jacob Report

Jacob's survey of research on student attitudes and values (23) has undoubtedly been the most widely discussed and criticized work of its nature in recent years.

Jacob concluded that the principal effect of undergraduate education was one of socialization rather than liberalization. Curriculums and instructors may influence student interests to some degree, but basic values

remain largely unaffected. Students actually become more homogeneous and less individualistic during college. They are tolerant, but they are also contented, self-centered, materialistic, and politically irresponsible; except for a few distinctive liberal-arts institutions, colleges have a negligible effect upon these characteristics.

Although educators were little inclined to question Jacob's general conclusions, his work was criticized on a number of more specific points. For example, Riesman (39) contended that Jacob had not sufficiently differentiated among kinds of data, that he had ignored important differences between college and noncollege populations, and that his view of students was overly censorious. According to Riesman, students who did not aspire to wealth or power, for example, but wanted family-centered lives, should not be described as materialistic.

Webster (45) found Vassar College students becoming more, rather than less, heterogeneous on most of the attitude measures obtained during college—an effect opposite to that which would have occurred if withdrawals from college had increased homogeneity. There remained the possibility, of course, that certain noncollege groups might have become even more diverse in attitude during the same age period, and there was therefore no conclusive evidence on how college experience affected the heterogeneity of young persons' attitudes. Barton (1), after discussing a number of related problems, urged more systematic research "on the enormously diverse set of experiments which is American college education today . . ." in order to answer some of the challenging questions raised by Jacob.

From interviews with faculty and students of 20 colleges, Eddy (13) corroborated some of Jacob's conclusions, finding variations in "the depth and the scope of the task which both the college and its students agree to pursue and in the intensity of the pursuit." A major conclusion was that a college's best contribution to character development would emphasize commitment to principles, but would depend primarily on "a properly balanced emphasis on learning." Eddy found much awareness of problems, and a willingness to discuss them, but some vacillation and confusion among students and a failure on the part of the college to develop "critical, active, and inquisitive minds." He recommended that research deal with faculty, compare students with nonstudents, seek the sources of precollege character growth, and observe the co-ordination of high-school and college programs.

Intensive Studies of Personality Functioning

Heath (19, 20) described a longitudinal study of 36 Princeton students of the class of 1954. Over 200 interviews, plus numerous group discussions, were recorded during the college careers of these subjects, who fell into three types along an impulse-control dimension: the stable and

noncommitted (N-19), the achievement-oriented "hustlers" (N-9), and the moody, spontaneous "plungers" (N-8). They were also classified according to degree of involvement with work and with people, the non-committed group gaining most on this dimension during college. The three types on the impulse continuum seemed to function best with different educational treatment. Heath's findings are of interest, even though the intensity of the study undoubtedly provided subjects with a kind of psychotherapy which influenced their development. It may be important that independent research at Vassar College led to the construction of similar developmental dimensions for describing women students. Freedman (14) observed Vassar students' desires to be accepted by the student culture, or peer group. The peer culture emphasized social acceptance and the leveling of individual differences; it discouraged serious relationships with faculty, which might have had the effect of changing students' values. Bushnell (6) reported that lack of commitment to intellectual goals or objectives, common to most Vassar students, was related to a desire to maintain their feminine identity, and to an "orientation toward home and hearth"; despite seniors' high educability, they did not transgress the bounds set by student culture and by society at large. Sanford (40) distinguished education, psychological health, maturity, and other developmental objectives, but emphasized the importance of the student culture in obtaining them. The culture contended that "the college work is to be taken seriously, but not too seriously If an ethical decision has to be made, the proper course is to see what the others think."

Lazure (25) compared changes in Vassar students with those observed in women attending French-Canadian Catholic colleges. Differences in the kinds of change seemed to be directly related to differences in the role expectations for educated women in the two cultures. The Canadian woman's role was more clearly defined, and therefore less personality disturbance ensued. Brown (4) asked the Vassar College faculty to nominate seniors believed best to personify the effects of liberal education; a substantial number of nominees had not obtained high grades. These impressive students with lower grades had distinctive personality-test profiles.

Some measures of theoretical importance in understanding change in college students were developed at Vassar, by means of a large pool of personality-test items (48). One scale measured freedom from authoritarian traits, such as compulsiveness, rigidity, punitiveness, submissiveness to power, a primitive conceptualization of others, cynicism, and anti-intellectualism; a second scale (41), which was nearly independent of the first, measured a readiness to express impulses or to seek gratification of them in overt action or in conscious feeling and attitude. Most students gained on both these traits during their college years.

Items distinguishing seniors from freshmen formed a third scale (45, 46), which corroborated the kinds of attitude change previously observed. Freshmen scoring high on this scale (that is, freshmen whose general

attitudes were like those of seniors) differed in a number of respects from those scoring low, as determined from interviews. High scorers had been both more independent socially than low scorers before entering college and more critical and undogmatic ideologically. Similar results were obtained for a sample of older alumnae.

Freedman (15) further described some characteristics of high and low scorers on these and other measures used in the Vassar College research. Vassar seniors scored slightly higher than freshmen on most of the scales of the *Minnesota Multiphasic Personality Inventory*. This result was consistent with the general findings about differences between Vassar seniors and freshmen (whether the same or different students): seniors were less conventional than freshmen, more critical of authority, more tolerant of weaknesses in others, more aware of their own sexual and aggressive impulses, and more likely to experience inner conflicts. The tests developed at Vassar were administered at various women's colleges, and the changes observed between the freshman and the senior years resembled the changes observed at Vassar. Such changes seem to indicate systematic personality development in late adolescence—including characteristic ways in which problems or conflicts are recognized and resolved.

Matteson (31) reported that analyses of increases and of discrepancies in interests and experiences over a two-year period supported the hypothesis that students' interests are modified by a program of general education. Levels and patterns of interest changed as new experiences became available, and the selection of educational objectives (for example, choosing a major) became a "developmental process," observable in counseling. In a longitudinal study of De Pauw University students, Wright and Scarborough (49) related shifts in interest patterns during college to increasing independence. Most students came from backgrounds where the climate was favorable to science and other "practical" subjects, rather than to the arts; in the freshman year, interests reflected this fact, but later shifted away from it, for example, toward interest in persuasive and artistic activities.

The Persistence of Changes

Questions were raised about the permanence or stability of changes in students. It has been assumed that college "prepares" for later life; if this is indeed the case, then changes which occur during college must be understood in terms of consequences long after graduation. Bender (2) and Nelson (35) reported persistence of most religious beliefs or values to be observable during the second decade after graduation, but adduced little evidence about how this persistence was related to development during college years. A few studies prior to the period covered by the review have shown that changes in expressed beliefs during college may persist or increase long after graduation, but actually nothing is known about

conditions which would favor or discourage persistence of attitudes or values. It seems likely, however, that general social conditions, as well as more specific situational influences, would be involved.

Technical Problems

Progress was made toward understanding the technical problems which arise in studies of change or growth. Lord (28) demonstrated why exact comparisons of *difference* scores, using ordinal (test-score) data, are impossible. Some meaningful comparisons are feasible, however, with certain reasonable assumptions. Measurement has been refined, but to distinguish change which is of central importance from various kinds of ancillary changes (which might better be described as "error") remains a problem.

Caldwell (7), for example, reported changes on scores of the *California Test of Personality*, obtained only six weeks after college entrance. Tests of significance indicated that a "true" change had occurred, and it was necessary to interpret the differences. A number of subtests revealed systematic gains corresponding to increases in different kinds of adjustment. These gains had the appearance of simple "practice" effects, but actually Caldwell's interview data disclosed that those students who gained the most were well aware of diverse influences associated with their changed scores. These influences included the stress of orientation week (during which the pre-test was administered), changes in testing conditions, the effect of the new (college) environment between tests, changes in test-taking attitude, and the like. Some of these influences could be described as contributing either to "true change" or to "measurement error," depending upon the investigator's notion of what he wished to measure.

Finally, it has been well established that difference scores based upon unreliable component scores are highly unreliable; consequently, investigators should always report internal consistency coefficients for both pre-test and post-test if they wish to infer that nonrandom, or true, change has occurred. The problem of measuring change or growth therefore depends directly upon the theory of test reliability, a topic which has received renewed attention, but which requires further elucidation.

Bibliography

1. BARTON, ALLEN H. *Studying the Effects of College Education: A Methodological Examination of Changing Values in College*. New Haven, Conn.: Edward W. Hazen Foundation, 1959. 96 p.
2. BENDER, IRVING E. "Changes in Religious Interest: A Retest After 15 Years." *Journal of Abnormal and Social Psychology* 57: 41-46; September 1958.
3. BRAGG, EMMA W. "A Study of Student Withdrawal at W. U." *Journal of Educational Psychology* 47: 199-202; April 1956.

4. BROWN, DONALD R. *Non-Intellectual Factors and Faculty Nominations of Ideal Students: Report to the College Entrance Examination Board*. Poughkeepsie, N. Y.: Mellon Foundation, Vassar College, 1959. 49 p.
5. BUCKLER, WILLIAM E. "College English Teacher Looks at Television: Composition." *Journal of Educational Sociology* 31: 346-52; May 1958.
6. BUSHNELL, JOHN. "What are the Changing Characteristics of the Undergraduate and What Do These Changes Mean for Programs of General Education?" *Current Issues in Higher Education, 1959*. Proceedings of the Fourteenth Annual National Conference on Higher Education. Washington, D. C.: Association for Higher Education, a department of the National Education Association, 1959. p. 130-43.
7. CALDWELL, EDWARD. "Stability of Scores on a Personality Inventory Administered During College Orientation Work." *Personnel and Guidance Journal* 38: 305-308; December 1959.
8. COOPER, RUSSELL M. "The Literature on Higher Education: Commentary." *Current Issues in Higher Education, 1958*. Proceedings of the Thirteenth Annual National Conference on Higher Education. Washington, D. C.: Association for Higher Education, a department of the National Education Association, 1958. p. 74-77.
9. DEL POPOLO, JOSEPH A. "Authoritarian Trends in Personality as Related to Attitudinal and Behavioral Traits of Student Teachers." *Journal of Educational Research* 53: 252-57; March 1960.
10. DREHER, ROBERT E., and BEATTY, WALCOTT H. *An Experimental Study of College Instruction Using Broadcast Television*. Instructional Television Research, Project No. 1. San Francisco: San Francisco State College, 1958. 75 p.
11. DRESSSEL, PAUL L., editor. *Evaluation in the Basic College at Michigan State University*. New York: Harper & Brothers, 1958. 248 p.
12. DRESSSEL, PAUL L., and MAYHEW, LEWIS B. "And There Should Be More." *Evaluation in the Basic College at Michigan State University*. (Edited by Paul L. Dressel.) New York: Harper & Brothers, 1958. Chapter 15, p. 232-41.
13. EDDY, EDWARD D., JR. *The College Influence on Student Character: An Exploratory Study in Selected Colleges and Universities Made for the Committee for the Study of Character Development in Education*. Washington, D. C.: American Council on Education, 1959. 185 p.
14. FREEDMAN, MERVIN B. "The Passage Through College." *Journal of Social Issues* 12: 13-28; No. 4, 1956.
15. FREEDMAN, MERVIN B. "Some Observations on Personality Development in College Women." *Student Medicine* 8: 228-45; February 1960.
16. FULLMER, DANIEL W. "Success and Perseverance of University Students." *Journal of Education* 27: 445-47; November 1956.
17. GLADSTEIN, GERALD A. "Study Behavior of Gifted Stereotype and Non-Stereotype College Students." *Personnel and Guidance Journal* 38: 470-74; February 1960.
18. GRACE, HARRY A. "Personality Factors and College Attrition." *Journal of Peabody Education* 35: 36-40; July 1957.
19. HEATH, S. ROY. "Personality and Student Development." *New Dimensions of Learning in a Free Society*. Pittsburgh: University of Pittsburgh Press, 1958. p. 225-45.
20. HEATH, S. ROY. "The Reasonable Adventurer and Others—A Two Factor Model of Ego Functioning." *Journal of Counseling Psychology* 6: 3-12; Spring 1959.
21. HOLMES, CHARLES H. "Why They Left College: A Study of Voluntary Freshman Withdrawals From the College of Liberal Arts at Syracuse University." *College and University* 34: 295-300; Spring 1959.
22. IFFERT, ROBERT E. *Retention and Withdrawal of College Students*. U. S. Department of Health, Education, and Welfare, Office of Education, Bulletin 1958, No. 1. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1958. 177 p.
23. JACOB, PHILIP E. *Changing Values in College: An Exploratory Study of the Impact of College Teaching*. New York: Harper & Brothers, 1957. 174 p.
24. KACAN, JEROME, and OTHERS. "Personality and I.Q. Change." *Journal of Abnormal and Social Psychology* 56: 261-66; March 1958.

25. LAZURE, MARTHA C. *An Intercultural Study of Personality Development in College Women of the United States and French Canada*. Master's thesis. Bryn Mawr, Pa.: Bryn Mawr College, 1959.
26. LEHMANN, IRVIN J. "Learning: Attitudes and Values." *Review of Educational Research* 28: 468-74; December 1958.
27. LEHMANN, IRVIN J., and IKENBERRY, STANLEY O. *Critical Thinking, Attitudes and Values in Higher Education: A Preliminary Report*. East Lansing: Michigan State University, 1959. 125 p.
28. LORD, FREDERIC M. "Further Problems in the Measurement of Growth." *Educational and Psychological Measurement* 18: 437-51; Autumn 1958.
29. MACOMBER, F. GLENN G., and SIEGEL, LAURENCE. *Final Report of the Experimental Study in Instructional Procedures*. Oxford, Ohio: Miami University, 1960. 96 p.
30. MCCONNELL, THOMAS R., and HEIST, PAUL A. "Do Students Make the College?" *College and University* 34: 442-52; Summer 1959.
31. MATTESON, ROSS W. "And Counselors Learn." *Evaluation in the Basic College at Michigan State University*. (Edited by Paul L. Dressel.) New York: Harper & Brothers, 1958. Chapter 12, p. 179-95.
32. MAYHEW, LEWIS B. "Analysis of the Literature on Higher Education." *Current Issues in Higher Education, 1959*. Proceedings of the Fourteenth Annual National Conference on Higher Education. Washington, D. C.: Association for Higher Education, a department of the National Education Association, 1959. p. 67-73.
33. MAYHEW, LEWIS B. "And in Attitudes." *Evaluation in the Basic College at Michigan State University*. (Edited by Paul L. Dressel.) New York: Harper & Brothers, 1958. Chapter 14, p. 214-31.
34. MAYHEW, LEWIS B., and WARRINGTON, WILLARD C. "On the Credit Side." *Evaluation in the Basic College at Michigan State University*. (Edited by Paul L. Dressel.) New York: Harper & Brothers, 1958. Chapter 10, p. 154-66.
35. NELSON, ERLAND N. P. *Patterns of Religious Attitude Shifts from College to Fourteen Years Later*. Psychological Monographs: General and Applied, Vol. 70, No. 17. Whole No. 424. Washington, D. C.: American Psychological Association, 1956. 15 p.
36. NORMAN, MARTHA, and TOMLINSON, LOREN R. "Personal-Social Development." *Review of Educational Research* 29: 197-208; April 1959.
37. PLANT, WALTER T. "Changes in Ethnocentrism Associated with a Four-Year College Education." *Journal of Educational Psychology* 49: 162-65; June 1959.
38. PLANT, WALTER T. "Changes in Ethnocentrism Associated with a Two-year College Experience." *Journal of Genetic Psychology* 92: 189-97; June 1958.
39. RIESMAN, DAVID. "The 'Jacob Report'." *American Sociological Review* 23: 732-38; December 1958.
40. SANFORD, NEVITT. "The Professor Looks at the Student." *The Two Ends of the Log: Learning and Teaching in Today's College*. (Edited by Russell M. Cooper.) Minneapolis: University of Minnesota Press, 1958. p. 3-25.
41. SANFORD, NEVITT; WEBSTER, HAROLD; and FREEDMAN, MERVIN. *Impulse Expression as a Variable of Personality*. Psychological Monographs: General and Applied, Vol. 71, No. 11. Whole No. 440. Washington, D. C.: American Psychological Association, 1957. 21 p.
42. SLATER, JOHN MARLOWE. "Perception: A Context for the Consideration of Persistence and Attrition Among College Men." *Personnel and Guidance Journal* 35: 435-40; March 1957.
43. STERN, GEORGE G. "Congruence and Dissonance in the Ecology of College Students." Paper read at the 37th Annual Meeting of the American College Health Association, Philadelphia, May 1959.
44. STERN, GEORGE G.; STEIN, MORRIS I.; and BLOOM, BENJAMIN S. *Methods in Personality Assessment*. Glencoe, Ill.: The Free Press, 1956. 271 p.
45. WEBSTER, HAROLD. "Changes in Attitudes During College." *Journal of Educational Psychology* 49: 109-17; June 1958.
46. WEBSTER, HAROLD. "Liberal Education for Scientists." *The Humanist* 17: 164-69; May-June 1957.
47. WEBSTER, HAROLD. "Some Quantitative Results." *Journal of Social Issues* 12: 29-43, No. 4, 1956.

48. WEBSTER, HAROLD. *VC Attitude Inventory and VC Figure Preference Test Research Manual*. Poughkeepsie, N. Y.: Mellon Foundation, Vassar College, 1957. 76 p. (Mimeo.)
49. WRIGHT, JOHN C., and SCARBOROUGH, BARRON B. "Relationship of the Interests of College Freshmen to their Interests as Sophomores and as Seniors." *Educational and Psychological Measurement* 18: 153-58; Spring 1958.
50. YOSHINO, I. ROGER. "College Drop-outs at the End of the Freshman Year." *Journal of Educational Sociology* 32: 42-48; September 1958.

CHAPTER V

The Educational Program

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IN THE ANALYSIS of the widely varied programs in higher education, it has seemed best to organize the literature according to the type of institution or program presented. The first three sections deal with these major types, and the fourth discusses interrelationships and articulation.

General and Liberal Education

Though most books, articles, and reports on general or liberal education are descriptive or polemic, an increasing number of items present some elements of empirical study. This sort has become significant since the major philanthropic foundations began to subsidize massive studies of education. It has also gained as institutions, either with or without subvention, reviewed their undergraduate programs and reported their findings. A national concern with a few issues implicit in liberal or general education, such as the problem of values, has added substantially to the literature.

Jacob (56) summarized hundreds of studies and reached the conclusion that colleges and universities did not have much effect on student values. His methodology was examined by Barton (11), who pointed out the difficulty in presenting a synthesis of studies done with varying rigor. Smith (91) also commented on Jacob's findings and urged that educators take to heart the sobering judgment of college students. Stimulated in part by the public uproar over the Jacob book, Eddy (37) made a participant-observer study of students in selected colleges at the request of the American Council on Education and found that, when well-supported, imaginative designs were used, there was evidence that the college experience had a substantial impact on student values. Carpenter (19) offered no substantial evidence of colleges' success in modifying values, but did reveal some significant experiments. (See also Chapter IV.)

By its nature, general education invites study and analysis by those in various kinds of professional education. The American Society for Engineering Education (4) discovered a trend of increasing technical content in engineering curriculums and urged that this trend be reversed by inclusion of social-humanistic studies in undergraduate programs and more theoretical work in the professional engineering courses. Stewart (95)

* Responsibility for proposing material for the chapter was delegated as follows: General and Liberal Education, Lewis B. Mayhew; Technical and Semiprofessional Education, Leland L. Medsker; Graduate and Professional Education, James H. Blessing; Articulation of Educational Programs, Chester L. Neudling.

found that students with nonscience premedical training achieved in medical school as well as, or better than, students with heavy undergraduate science concentrations. A need to provide more generally educated teachers who are at the same time technically more proficient has led to various studies and projects. Illustrative is a study conducted by Temple University (99), which subsidized students of seven different colleges in an enriched but extended teacher-training program. While the subsidy lasted, general education flourished; when it ran out, so did much of the enthusiasm of both colleges and students.

The publications emerging from Earl J. McGrath's Institute for Higher Education are so significant as to warrant special attention. In the first series of reports, McGrath and Russell (67) found a growing tendency for professional education to become more liberal and for liberal education to become more professional. Dressel, Mayhew, and McGrath (34) found that professional faculty members tend to agree with the abstract goals of liberal education but that they attach real significance only to those subjects having practical values. Drawing on the background of such studies, McGrath (66) judged that education can no longer afford a sharp dichotomy between liberal and professional studies. Russell (88) found that nursing education is now moving to eradicate the dichotomy. That no type of professional and technical education must exclude liberal and general studies from the curriculum because of the age and character of students is in part established by DeCrow (24), who showed that evening students do as well in liberal arts courses as regular students, if not better.

Several studies dealt with the integration of general or liberal education. Hong (55) perceived an integrating principle in a core of required general-education courses linked with a theological orientation. This solution found favor in a number of the colleges and universities described in the National Society for the Study of Education (NSSE) Yearbook, *The Integration of Educational Experiences* (75). Many institutions attempted to integrate educational experience by creating senior synthesizing courses. Stickler (96) surveyed the country, and his descriptions of such courses revealed a variety of methods, the most typical of which is a senior course based largely on one of the four major disciplines. Relatively few institutions have succeeded with a single integrated course to be taken by all seniors regardless of the field in which they are majoring.

A number of national and regional studies were concerned with all or part of general or liberal education. Dressel and Mayhew (30), presenting the outcomes of the Cooperative Study of Evaluation in General Education, showed that students achieve general-education objectives, but do so differently from one institution to another. They also showed that, starting with an evaluation problem, changes in teaching procedure can result (28, 29, 31, 32). Methods for the improvement of teaching were likewise among the greatest gains found in studies by Trowbridge (100) and Hill and Potthoff (54). The Hill-Potthoff book and that edited by Sebaly (90) are concerned chiefly with the general-education aspects of teacher preparation.

Sebaly concluded that even in the face of the doctrine of separation, state-supported colleges can add important religious elements to their general or liberal studies.

Even more numerous than regional or national studies have been various inquiries of institutions into their own programs. Eckert and Keller (36) reported on studies of University of Minnesota students and graduates. So did Dressel and his colleagues at Michigan State University (25). Syracuse University, which has concentrated on training teachers for general education, reported a 13-year evaluation and found the program essentially sound. One chapter in Hamilton and Blackman (49) summarized research studies dealing with the general-education program at Michigan State University.

Brubacher and Rudy (17) and Schmidt (89) wrote solid histories which emphasize the distinctly American character of the liberal-arts college and the peculiar curriculum problems it faces.

Useful bibliographies on general and liberal education appeared. McGrath and his colleagues developed major lists. Dressel and Mayhew (33) offered a selected list of works appearing up to 1954, and Dressel (26, 27) prepared two annotated bibliographies of research. Hatch and Bennet (52) announced bibliographies based on reported studies of general and liberal education, and other aspects of higher education as well.

Technical and Semiprofessional Education

The literature of technical and semiprofessional education tends toward generalization and observation rather than empirical data. The limited number of studies available dealt primarily with (a) the need for such training, (b) the types of institutions offering it, and (c) analysis of specific programs. There is some confusion over terms, but technical education is here defined as training for occupations between those of the skilled worker and the professional scientist or engineer. Semiprofessional education is used as a broad term to denote post-high-school training of a non-baccalaureate nature for a variety of occupations, including medical and health services, business, and those related to science and engineering.

The Need for Training

The need for trained people is generally expressed in terms of the ratio of technicians and semiprofessional workers to engineers, scientists, and other professionals. Henninger (53), sampling employers of technicians nationally, found that in industry the median ratio of technicians to engineers in 1957-58 was .8 to 1. Approximately 30 percent more technicians were needed than were available. He predicted that within the next decade employers would require more than twice as many new technicians as new graduate engineers.

The American Society for Engineering Education (6) announced that the United States is training only one-third as many technicians as are

needed, and recommended a 5 to 1 ratio of technicians to engineers. A study prepared for the U.S. Congress (85) stated: "The shortage of subprofessional technicians may well represent a greater threat to the nation's security than does the shortage of engineers or scientists." Similar findings have been reported in various states. A study in Connecticut (21) revealed a ratio of 1 to 1 and recommended a ratio of at least 3 to 1. A Florida study (40) revealed need for a minimum ratio of 2 to 1. A survey of 237 business organizations in Oregon (80) predicted that increase in the number of technicians employed in the future would be much greater than in the number of workers generally.

Although technicians and semiprofessional workers constitute a large and increasing proportion of the nation's labor force, data are difficult to obtain. This is because (a) definitions of "technical" and "semiprofessional" are not precise, (b) many people with full professional training are employed in subprofessional categories, and (c) there is wide variation in the use of such workers among professions and industries. The nation's rapidly changing occupational structure resulting from expanding technology and automation suggests the need for a thorough and continuing analysis of technician jobs and the training required for them.

Preparation of Technical and Semiprofessional Workers

Primarily three types of institutions prepare technical and semiprofessional workers: junior colleges, community colleges, and universities.

The California State Department of Education (18), Dye (35), Gordon and Howell (46), Harris (50), Koch (59), Medsker (68), Montag (70), the NSSE (76), the President's Committee on Scientists and Engineers (84), the U.S. Department of Labor (101), and Van Wagenen (103) all stressed the growing importance and responsibility of junior colleges to provide this type of education. Montag (70) showed that graduates of two-year experimental nursing-education programs of junior and community colleges performed their duties well, supporting the belief that these colleges can, with proper planning, become centers for nursing education.

Medsker's (68) analysis of enrollments in 75 two-year colleges in 15 states revealed that only about one-third of the entering students enrolled in technical or semiprofessional curriculums, although two-thirds of those entering did not transfer and hence became terminal students who presumably would have profited from occupational training. He identified several problems which the junior college faces as it attempts to prepare semiprofessional workers, among them the lack of precise information about needs of such students and the greater prestige attaching to a program which leads to transfer and a baccalaureate degree.

Smith and Lipsett (93) and Henninger (53) delineated the important role of technical institutes in training technicians. Smith observed that in 1954-55 these institutions offered 347 different technical curriculums, 251

being technological in nature and only 96 pertaining to nonengineering occupations. Henninger's comprehensive analysis caused him to conclude that "the technical institute idea in higher education has achieved in several significant areas of industrial and civic life a recognized pattern." He perceived one of its major problems to be lack of educational and professional status, both for itself and its graduates.

Four-year colleges may, and often do, offer technical and semiprofessional training not requiring the bachelor's degree. The U.S. Department of Health, Education, and Welfare found that almost one-third of such institutions offered technical programs and almost three-fourths of the two-year institutions had organized occupational curriculums.

Curriculums and Enrollments in Various Technical and Semiprofessional Fields

Armsby, Eells, and Martorana (7) analyzed enrollments in the organized nonbaccalaureate occupational curriculums offered by two- and four-year institutions in the United States for both 1956 and 1957. In 1957 a total of 204,795 students enrolled in engineering courses, and almost twice that number in nonengineering programs. Of students enrolled in nonengineering, related programs, the largest number was in business and commerce. Nonengineering, related curriculums included courses in such occupational areas as agriculture and forestry, the applied and graphic arts, education, home economics, and health services. In one study Medsker (68) ascertained that in junior colleges more students were enrolled in terminal business curriculums than in any other technical program, though in another sample he found that the number of students in engineering curriculums slightly exceeded those in terminal programs.

Problems in Technical and Semiprofessional Training

In addition to the fact that technical and semiprofessional training does not always command the status and prestige necessary to attract students, other problems are inherent in it. There is, for example, the question of curriculum content and the amount of general education which should be included. Booher (16), surveying 48 institutions and 249 technical curriculums, found that the average time devoted to general education was 9.6 percent, exclusive of New York, where it was 20.32 percent. Henninger's study (53), however, showed the median of general-education courses in curriculums currently accredited by the Engineers' Council for Professional Development to be only 3 percent.

There is need for a thorough study of requirements in subprofessional occupations which, when combined with the personal needs of individuals, will help point the way to a desirable balance between occupational and general education. How much specific training can be acquired on the job,

permitting more curricular time to be devoted to general education and the related basic sciences? No significant research on this question was found. If community colleges and technical institutes are to become increasingly responsible for the preparation of technical personnel, the nature of the training program for such personnel must soon be determined.

Other problems identified with technical and semiprofessional education include (a) shortage of teachers and (b) lack of training facilities. Montag (70) concluded that "the need for personnel prepared to teach nursing in the junior-community colleges is great and the development of these nursing programs is definitely related to the preparation of personnel equipped to carry on such programs." Henninger (53) submitted evidence to show that the number of full-time day instructors for all technical institutes should be increased 36 percent by 1960, and 79 percent by 1965, over those available in 1956. Beatty (12) concluded that technical-institute facilities would have to be increased sixfold to tenfold within the next decade at a minimum cost of \$3 billion. Quattlebaum (85) pointed out the shortage of facilities in both technical institutes and junior colleges.

Graduate and Professional Education

Research continued to concern itself with the nature and purposes of the graduate program, but another area of interest—the impact of federal and other research and fellowship programs and the capability of the graduate schools to respond to suddenly crucial national needs—emerged as a second major subject of research. In professional education, several important studies of particular fields appeared.

Graduate Education: Purposes and Programs

The relevance of graduate education to college teaching continued to receive much attention. Some operative programs designed as preparation for college teaching were described by Albright and Barrows (1). Strothmann's report for the Committee of Fifteen (97) recommended broader curriculums, teaching internships, and redefinition of dissertation requirements as a means of meeting the needs of future college teachers. Though there seems to be general agreement that an introduction to teaching is a desirable component of graduate education for those who plan to teach, surveys of interested opinion show opposition to any fundamental modification of the traditional orientation toward scholarship and research. Axelrod's summary of the American Council on Education conference on college-teacher preparation (10) provided an excellent analysis of the problem. At bottom, educational values are at issue: Should German *Wissenschaft* or a less rigorous, more liberal kind of learning, supposedly more appropriate to the needs of undergraduate colleges, prevail? Berelson (13) pointed out that research, not liberal-arts-college teaching, has be-

come the major occupation of doctoral graduates. Thus, the instrumental argument for change has lost some force. Bereison has completed, but not yet published, a survey of major significance based on an elaborate analysis of statistics and a wide-ranging poll of opinions. His conclusion is that the Ph.D. degree "is what institutions of higher education want—so much so that that fact gets in the way of any radical experiment, and many moderate experiments, to prepare college teachers differently." (13, p. 92.)

A troublesome consequence of this basic reliance on doctoral preparation is the inability of the graduate schools to produce the number of Ph.D.'s the colleges need. The Committee on Policies of the Association of Graduate Schools (9) investigated factors tending to prolong the process of completing the Ph.D. and then advocated (8) a well-defined, three-year doctoral program and a rehabilitation of the M.A. degree. The Southern Regional Education Board is currently studying the problems of length of time and uncertainty connected with work toward the doctorate in 15 major fields.

Other curricular and organizational problems were brought to light in institutional self-studies done at Columbia (86), Harvard (38), Florida State (41), and Pennsylvania (57) Universities, and elsewhere. There appeared to be much room for improvement, even granting consensus upon objectives and methods. These studies have a wide usefulness as mirrors for practices and models for studies elsewhere. Hatch's bibliography (51) of institutional research in graduate and professional education reported by institutional representatives to the U.S. Office of Education remained an important service.

Perhaps the most important single study of graduate education was Ness's compilation (77) of existing doctoral programs and requirements, listed by institution and, in a supplemental index, by field. Ness's introductory essay also provided an excellent informal guide to graduate work for prospective or beginning students.

Graduate Education as a National Resource

Realization of the importance of graduate education as a source of scientific and professional manpower resulted in a vast new research effort, conducted for the most part by national agencies, aimed at finding out what is being done, and what can be done. The federal government has been especially interested in measuring its involvement in, and the impact of that involvement upon, the graduate enterprise. The National Science Foundation study (74) of university expenditures (from all sources) and resources for scientific research in 1953-54 provided valuable, but now outdated, measurements of the extent and cost of research activities. The Office of Education is beginning a study, authorized by the National Defense Education Act of 1958, of the educational programs of all federal departments and agencies as they utilize institutions of higher education,

and of the effects of these programs upon the colleges and universities. Kidd (58) dealt with every aspect of the impact of federal aid on research. One of his findings was that large-scale federal support of research has served generally to improve, rather than impair, the quality of graduate education in the sciences and engineering. The National Science Foundation (72) and the American Council on Education (2) urged governmental agencies and universities to adhere to policies designed to preserve the financial independence and educational efficacy of university programs.

The need for national statistics concerning graduate education has become acute. Graduate enrollment and degree statistics continued to appear in the biennial (83) and annual (44) publications of the Office of Education. The gross enrollment statistics have not been very helpful, but the office has undertaken a new survey of graduate enrollments for the fall of 1959 at first-year, intermediate, and terminal-doctoral levels in 60 fields in the sciences, health professions, and selected social sciences.

The National Science Foundation (73), by means of a questionnaire survey of department chairmen, gathered and analyzed data on first-year and advanced enrollments and on fellowship, teaching-assistantship, and research-assistantship support of four-fifths of the nation's graduate students during the year 1953-54. This survey provided the precise and detailed picture of the national supply and financial encouragement of graduate students which must underlie any determination of what is required to meet the nation's needs for graduate-trained manpower. The Office of Education has completed, but not yet published, the results of a survey of graduate fellowships awarded for 1959-60 in each of the fields of arts and sciences, and also (much needed) of graduate schools' capacities for enrolling additional doctoral candidates in each of these fields.

Professional Education

Because of the diversity and structural decentralization of professional education, most research has been confined to single fields. Only works of far-reaching importance or comprehensive scope have been included in the bibliography. These works pertain to the fields of business (46, 82), engineering (5), journalism (107), law (78), library science (61), medicine (3), public administration (98), social work (22), and theology (79).

Two general surveys of professional education, both edited by Blauch (14, 15), were published by the U.S. Office of Education. The former described the development and academic requirements of each field of professional education, and the latter the agencies, standards, and procedures of accreditation in those fields. McGlothlin (64), comparing the educational programs of 10 professions, tested the practices of each profession against those of others. McGrath (66) and Dressel, Mayhew, and McGrath (34), studying the relationships between undergraduate professional education and liberal-arts education, observed that professional schools

have in recent years greatly increased the amount of general education required, that liberal-arts colleges have greatly increased their professional offerings, and that the two types of institutions are becoming more and more alike in their purposes and curriculums.

Articulation of Educational Programs

Research on articulation has tended to broaden the definition of the term to include not only transition from level to level or from school to college, but also the problems attending acceleration, greater flexibility in the curriculum, and transfer from one college subject field or program of instruction to another. Recent interest in advanced placement, early admission to college, honors programs, and independent study has contributed to this extension of meaning. Growth of junior colleges, which now have both terminal and college-preparatory programs, has increased the range of the articulation interest. There has also been an upward extension in the meaning of the term "articulation" to include graduate and professional schools.

The most recent formal definition of articulation indicates the present scope of the term: "the relationship and interdependence existing among the different elements of the educational program; may designate the degree of relationship among the different curricular offerings, between the curriculum and the institutional regimen, student activities, and provisions for pupil guidance, or between the school's program and out-of-school educational institutions and activities . . . or the degree to which the interlocking and interrelation of the successive levels of the educational system facilitate continuous and efficient educational progress of pupils." (45, p. 39.)

Intra- and Inter-Institutional Co-ordination of Programs

The Western College Association (104) in 1959 explored institutional co-ordination, but concluded that secondary schools were not adequately represented in efforts to achieve such co-ordination. A lateral extension of the articulation problem as it affects institutional planning was explored by several studies. Litchfield (62, 63) raised the question of articulation among units of the complex university. McGrath (65) showed how such problems of organization in the complex university affect a program of general education.

Junior-College Transfers

The most heavily researched area was articulation concerned with transfer students, especially those transferring from community and junior

colleges to four-year institutions; for example, Florida State University, in one of a series of studies (42) relating to junior-college and other transfer students, found significant articulation problems within a single state system. In California, Gray (48) found nonacademic factors to affect achievement of junior-college students transferring to San Diego State College.

Other Articulation Areas

Transfer of students between four-year colleges, between colleges and universities, and between undergraduate and graduate or professional schools was also much studied. Milholland (69) observed performance of transfer students in the University of Michigan. Wilson (108) pointed to the articulation problem of students transferring from undergraduate colleges to professional or graduate schools. Wolf (109) reported on a project for integration of the last year of college and the first year of medical school.

Research in Subject Areas

Studies in the sciences and mathematics predominated. Lawrence (60) reported on methods of improving articulation in chemistry. Columbia University (20) reported that college-level science courses and research projects in its science honors program contributed to both college motivation and achievement of high-school students. Fliedner (39) explored relationships of science courses in high schools and colleges, and Smith (92) reported on specific problems of articulation in science. Van Engen (102) explored continuity in the mathematics curriculum, and Roskopf (87) outlined methods of articulation of the secondary-school and college mathematics programs.

Advanced Placement

Of programs designed to improve articulation, advanced placement appears currently the most active and is represented by the greatest concentration of research. The College Entrance Examination Board took over the Advanced Placement Program in 1955 and has presided over its remarkable growth since then. Studies of administrative action, growth, and statistical summaries of the programs were carried out by Perry (81), by Stetson University (94), by Wilcox (106) at Harvard University, and by Yale University (110, 111). Large-scale experiments with advanced placement were reported by the Westminster Schools (105) and by the National Council of Independent Schools (NCIS) (71). In general, research on advanced placement indicated continuing experimentation in

course content and emphasis. The NCIS study (71) reflected this condition and underlined the fact that nearly half of the secondary schools presenting one or more candidates for advanced placement subject-matter examinations in 1958 were private secondary schools and members of NCIS.

Early Admission

The study of early admission published by the Fund for the Advancement of Education (43) in 1957 set forth results of the program to that date. Faculties of participating institutions, reviewing students' records, concluded that early admission had been wise in at least three out of four cases. The 1350 Early Admission Scholars admitted in 1951-54 generally showed better academic performance than their classmates in college. They also appeared to have made satisfactory social and emotional adjustments and participated in extra-class activities. Goucher College (47) reported equally encouraging results in the three years of its early-admission program.

Summer Programs

There was more interest in summer institutes and summer honors work for high-school students. Cummings (23) reported on operation of an institute for high-school juniors at the University of South Dakota. Stetson University (94) described its summer program in mathematics for secondary-school students as part of an early-admission and advanced-studies program.

Trends and Needs

New dimensions were added to the articulation problem by the research reviewed. Greatly increased flexibility in high-school curriculums has introduced problems of multiple-learning rates and co-ordination of advanced-placement classes, honors programs, and the various tracks. Further dimensions appeared in the interrelationship of subject fields, an area now being explored in depth at experimental colleges such as Monteith and Michigan State-Oakland. Articulation between institutions and among units of the same institution received attention. Large state-college systems have studied the transfer problem, especially those systems with large junior-college populations. There seems to be little co-ordination between colleges and professional schools in the complex university, and difficulties result for students transferring from a college to a professional school.

In its new shape, the articulation problem stimulated examination of the total instructional program of later adolescence as a student-centered activity. Additional research is needed to measure more fully and accurately

the results of advanced-placement programs and other means of adapting the instructional process to the abilities and intellectual-emotional-social maturity of the student. Further work on independent study as a means of providing flexibility between available programs appears to be in order. The most pressing need, however, is for a successful formula of co-operation between public secondary schools and colleges to evolve close working relationships on course content, institutional objectives, and impact on student values. To date, the formal programs of co-operation between secondary schools and colleges have been largely among private institutions.

Conclusion

It is clear that considerable empirical and historical research is helping to define the problems of higher education and to survey existing practices. Though more study of this kind is required, there is particular need now for case studies and analyses in depth which will show how and why important adjustments can occur. For example, what kinds of forces actually affect student values and how? What liberal and technical competencies should students in a given field possess, and how can these be realized and brought to reinforce the others? What kind of graduate or professional preparation does the student find most essential as he moves into his first job? Can a continuum of development be drawn for typical students, specifying the responsibilities of formal education at each stage?

The greater concern with institutional research and self-studies which we now observe should help shape stronger educational programs in the future.

Bibliography

1. ALBRIGHT, ARNOLD D., and BARROWS, JOHN E. *Preparing College Teachers*. Lexington: The University of Kentucky and The Southern Regional Education Board, 1959. 155 p.
2. AMERICAN COUNCIL ON EDUCATION, COMMITTEE ON INSTITUTIONAL RESEARCH POLICY. *Sponsored Research Policy of Colleges and Universities: A Report*. Washington, D. C.: the Council, 1954. 95 p.
3. AMERICAN MEDICAL ASSOCIATION, COUNCIL ON MEDICAL EDUCATION AND HOSPITALS. "Medical Education in the United States and Canada." *Journal of the American Medical Association* 171: 1507-79; November 14, 1959.
4. AMERICAN SOCIETY FOR ENGINEERING EDUCATION. *General Education in Engineering, A Report of the Humanistic-Social Research Project*. Urbana: the Society, University of Illinois, 1956. 122 p.
5. AMERICAN SOCIETY FOR ENGINEERING EDUCATION, COMMITTEE ON EVALUATION OF ENGINEERING EDUCATION. "Report on Evaluation of Engineering Education; With Summary." *Journal of Engineering Education* 46: 25-60; September 1955.
6. AMERICAN SOCIETY FOR ENGINEERING EDUCATION, TECHNICAL INSTITUTE DIVISION. *National Survey of Technical Institute Education 1956-1957*. Urbana: the Society, University of Illinois, 1958.

7. ARMSBY, HENRY H.; EELLS, WALTER; and MARTORANA, S. V. *Organized Occupational Curriculums, Enrollments and Graduates*, 1957. U. S. Department of Health, Education, and Welfare, Office of Education, Circular No. 568. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1959. 201 p.
8. ASSOCIATION OF GRADUATE SCHOOLS, COMMITTEE ON POLICIES IN GRADUATE EDUCATION. "Doctors and Masters—Good and Bad!" *Journal of Proceedings and Addresses of the Fifty-eighth Annual Conference of the Association of American Universities and Ninth Annual Conference of the Association of Graduate Schools*. (Edited by Henry E. Bent.) Columbia: The Graduate School, University of Missouri, 1957. p. 33-48.
9. ASSOCIATION OF GRADUATE SCHOOLS, COMMITTEE ON POLICIES IN GRADUATE EDUCATION. "Report of the Committee on Policies in Graduate Education." *Journal of Proceedings and Addresses of the Fifty-seventh Annual Conference of the Association of American Universities and Eighth Annual Conference of the Association of Graduate Schools*. (Edited by Henry E. Bent.) Princeton, N. J.: Princeton University Press, 1956. p. 8-31.
10. AXELROD, JOSEPH, editor. *Graduate Study for Future College Teachers: Report*. Washington, D. C.: American Council on Education, 1959. 111 p.
11. BARTON, ALLEN H. *Studying the Effects of College Education: A Methodological Examination of Changing Values in College*. New Haven, Conn.: Edward W. Hazen Foundation, 1959. 96 p.
12. BEATTY, H. RUSSELL. *How the Technical Institute Can Meet the Challenge of Technical Education*. Boston, Mass.: Wentworth Institute (550 Huntington Ave.), 1958. 12 p.
13. BERELSON, BERNARD. "Graduate Education and the Preparation of College Teachers." *Faculty Supply, Demand, and Recruitment*. Proceedings of a regional conference sponsored by the New England Board of Higher Education. (Edited by John W. Gustad.) Winchester, Mass.: the Board, 1959. p. 74-92.
14. BLAUCH, LLOYD E., editor. *Accreditation in Higher Education*. U. S. Department of Health, Education, and Welfare, Office of Education. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1955. 317 p.
15. BLAUCH, LLOYD E., editor. *Accreditation in Higher Education*. U. S. Department of Health, Education, and Welfare, Office of Education. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1959. 247 p.
16. BOOHER, EDWARD E. "Survey of General Education in Technical Institutions." *Technical Education News* 14: 6; Special Issue, 1954.
17. BRUBACHER, JOHN S., and RUDY, WILLIS. *Higher Education in Transition: An American History, 1636-1956*. New York: Harper & Brothers, 1958. 494 p.
18. CALIFORNIA STATE DEPARTMENT OF EDUCATION. *A Study of Technical Education in California*. Sacramento: the Department, 28: No. 7; September 1959. 122 p.
19. CARPENTER, MARJORIE, editor. *The Larger Learning: Teaching Values to College Students*. Dubuque, Iowa: William C. Brown Co., 1960. 78 p.
20. COLUMBIA UNIVERSITY. *Science Honors Program, Preliminary Report*. New York: School of Engineering, Columbia University, 1959. 30 p. (Mimeo.)
21. CONNECTICUT STATE DEPARTMENT OF EDUCATION. *Technicians for Connecticut Industry—A Study of Need for Technical Institutes*. Bulletin No. 82. Hartford: the Department, 1957. 52 p.
22. COUNCIL ON SOCIAL WORK EDUCATION. *Project Reports of the Curriculum Study*. New York: the Council, 1959. Vol. 1-13, 1944 p.
23. CUMMINGS, SHERWOOD. *The Summer Institute for High School Honors Students at the University of South Dakota, June 9-July 18, 1958*. Vermillion: University of South Dakota, 1958. 4 p. (Mimeo.)
24. DECROW, ROGER. *Ability and Achievement of Evening College and Extension Students: A Report*. Chicago: Center for the Study of Liberal Education for Adults, 1959. 13 p.
25. DRESSEL, PAUL L., editor. *Evaluation in the Basic College at Michigan State University*. New York: Harper & Brothers, 1958. 248 p.
26. DRESSEL, PAUL L. *Research in General Education Instruction, 1955; A Selected and Annotated Bibliography of Research Articles Having Implications for General Education Instruction*. Washington, D. C.: Association for Higher Education, a department of the National Education Association, 1955. 21 p.

27. DRESSEL, PAUL L. *Research in General Education Instruction, 1957; Selected and Annotated Bibliography of Research Articles Having Implications for General Education Instruction*. Washington, D. C.: Association for Higher Education, a department of the National Education Association, 1955. 20 p.
28. DRESSEL, PAUL L., and MAYHEW, LEWIS B., editors. *Critical Analysis and Judgment in the Humanities: A Handbook for the Teaching and Evaluation of Critical Judgment*. Dubuque, Iowa: William C. Brown Co., 1956. 92 p.
29. DRESSEL, PAUL L., and MAYHEW, LEWIS B., editors. *Critical Thinking in Social Science: A Handbook of Suggestions for Evaluation and Teaching*. Dubuque, Iowa: William C. Brown Co., 1954. 36 p.
30. DRESSEL, PAUL L., and MAYHEW, LEWIS B., editors. *General Education: Explorations in Evaluation; The Final Report*. Washington, D. C.: American Council on Education, 1954. 302 p.
31. DRESSEL, PAUL L., and MAYHEW, LEWIS B., editors. *Handbook for Theme Analysis*. Dubuque, Iowa: William C. Brown Co., 1954. 78 p.
32. DRESSEL, PAUL L., and MAYHEW, LEWIS B., editors. *Science Reasoning and Understanding: A Handbook for College Teachers*. Dubuque, Iowa: William C. Brown Co., 1954. 223 p.
33. DRESSEL, PAUL L., and MAYHEW, LEWIS B., compilers. "A Selected Bibliography in General Education." *Journal of General Education* 8: 261-86; July 1955.
34. DRESSEL, PAUL L.; MAYHEW, LEWIS B.; and MCGRATH, EARL J. *The Liberal Arts as Viewed by Faculty Members in Professional Schools*. New York: Bureau of Publications, Teachers College, Columbia University, 1959. 68 p.
35. DYE, SISTER ELIZABETH. "A Preprofessional Study—Practice Program: A Junior College Opportunity." *Junior College Journal* 26: 8-14; September 1955.
36. ECKERT, RUTH E., and KELLER, ROBERT J., editors. *A University Looks at Its Program: The Report of the University of Minnesota Bureau of Institutional Research, 1942-1952*. Minneapolis: University of Minnesota Press, 1954. 223 p.
37. EDDY, EDWARD D., JR. *The College Influence on Student Character*. New York: Harper & Brothers, 1959. 185 p.
38. ELDER, J. PETER. *A Criticism of the Graduate School of Arts and Sciences in Harvard University and Radcliffe College*. Cambridge, Mass.: Harvard University Press, 1958. 48 p.
39. FLIEDNER, LEONARD J. "Inter-relationships in Science Between High Schools and Colleges." *High Points* 41: 25-32; May 1959.
40. FLORIDA STATE DEPARTMENT OF EDUCATION. *Technical Education*. Bulletin 79 B-1. Tallahassee: the Department, 1957. 15 p.
41. FLORIDA STATE UNIVERSITY, OFFICE OF EDUCATIONAL RESEARCH AND SERVICE. *Study of Doctoral Graduates and Their Reactions to the Doctoral Program at the University*. Tallahassee: the University, 1957. 107 p.
42. FLORIDA STATE UNIVERSITY, OFFICE OF INSTITUTIONAL RESEARCH AND SERVICE. *A Study of Florida Junior College Transfer Students in the Florida State University: Fall Semester, 1958-1959*. Tallahassee: the University, 1959. 15 p. (Mimeo.)
43. FUND FOR THE ADVANCEMENT OF EDUCATION. *They Went to College Early*. New York: the Fund, 1957. 117 p.
44. GERTLER, DIANE B., compiler. *Earned Degrees Conferred by Higher Educational Institutions, 1957-1958*. U. S. Department of Health, Education, and Welfare, Office of Education, Circular No. 570. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1959. 210 p.
45. GOOD, CARTER V., editor. *Dictionary of Education*. Second edition. New York: McGraw-Hill Book Co., 1959. 676 p.
46. GORDON, ROBERT A., and HOWELL, JAMES E. *Higher Education for Business*. New York: Columbia University Press, 1959. 491 p.
47. GOUCHER COLLEGE. *Experiment on Early Admission to College—(Reports on First, Second, and Fourth Years) 1952, 1953, 1955*. Towson, Md.: the College, 1956.
48. GRAY, ROBERT T. *A Study of Selected Factors Related to the First-Term Achievement of Students Transferring to San Diego State College from Junior Colleges*. San Diego, Calif.: the College, 1956.

49. HAMILTON, THOMAS H., and BLACKMAN, EDWARD, editors. *The Basic College of Michigan State*. East Lansing: Michigan State College Press, 1955. 127 p.
50. HARRIS, NORMAN C. "Technical Education in the Community College." *Junior College Journal* 25: 200-208; December 1954.
51. HATCH, WINSLOW R., editor. *Reporter: Clearinghouse of Studies on Higher Education*. U. S. Department of Health, Education, and Welfare, Office of Education, Circular No. 562. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1959. p. 31-33 and 45-53.
52. HATCH, WINSLOW R., and BENNET, ANN, editors. *Reporter: Clearinghouse of Studies on Higher Education*. U. S. Department of Health, Education, and Welfare, Office of Education, Circular No. 611. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1960. 55 p.
53. HENNINGER, G. ROSS. *The Technical Institute in America*. New York: McGraw-Hill Book Co., 1959. 276 p.
54. HILL, GEORGE E., and POTTHOFF, EDWARD F., editors. *Improving Teacher Education Through Inter-College Cooperation*. Dubuque, Iowa: William C. Brown Co., 1957. 250 p.
55. HONG, HOWARD, editor. *Integration in the Christian Liberal Arts College*, Northfield, Minn.: St. Olaf College Press, 1956. 252 p.
56. JACOB, PHILIP E. *Changing Values in College: An Exploratory Study of the Impact of College Teaching*. New York: Harper & Brothers, 1957. 174 p.
57. KENISTON, HAYWARD. *Graduate Study and Research in the Arts and Sciences at the University of Pennsylvania*. Philadelphia: University of Pennsylvania Press, 1959. 150 p.
58. KIDD, CHARLES V. *American Universities and Federal Research*. Cambridge, Mass.: Belknap Press, 1959. 272 p.
59. KOCH, MOSES S. "Proposed: A Junior College Program to Train Urban Professional Assistants." *Junior College Journal* 30: 65-76; October 1959.
60. LAWRENCE, ALBERT E. "Articulation of High-School and College Chemistry Instruction." *Journal of Chemical Education* 32: 25-28; January 1955.
61. LEIGH, ROBERT D., editor. *Major Problems in the Education of Librarians*. New York: Columbia University Press, 1954. 116 p.
62. LITCHFIELD, EDWARD H. "Organization in Large American Universities." *Journal of Higher Education* 30: 353-64 and 489-504; October and December 1959.
63. LITCHFIELD, EDWARD H. "University: A Congeries or an Organic Whole?" *American Association of University Professors Bulletin* 45: 374-79; September 1959.
64. MCGLOTHLIN, WILLIAM J. *Patterns of Professional Education*. New York: G. P. Putnam's Sons, 1960. 288 p.
65. MCGRATH, EARL J. "General Education in a Complex University." *Teachers College Record* 59: 137-48; December 1957.
66. MCGRATH, EARL J. *Liberal Education in the Professions*. New York: Bureau of Publications, Teachers College, Columbia University, 1959. 63 p.
67. MCGRATH, EARL J., and RUSSELL, CHARLES H. *Are Liberal Arts Colleges Becoming Professional Schools?* New York: Bureau of Publications, Teachers College, Columbia University, 1958. 26 p.
68. MEDSKER, LELAND L. *The Junior College: Progress and Prospect*. New York: McGraw-Hill Book Co., 1960. 367 p.
69. MILHOLLAND, JOHN E. "Academic Performance of Transfer Students." *Addresses Given at the Annual Conference on Higher Education, 1957*. University of Michigan Official Publications, Vol. 59, No. 95. Ann Arbor: the University, 1958. p. 7-14.
70. MONTAG, MILDRED L. *Community College Education for Nursing: An Experiment in Technical Education for Nursing*. New York: McGraw-Hill Book Co., 1959. 457 p.
71. NATIONAL COUNCIL OF INDEPENDENT SCHOOLS. *The Advanced Placement Program in Independent Secondary Schools, Special Report*. Boston: the Council (84 State Street), May 1959.
72. NATIONAL SCIENCE FOUNDATION. *Government-University Relationships in Federally Sponsored Scientific Research and Development*. NSF 58-10. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1958. 44 p.

73. NATIONAL SCIENCE FOUNDATION. *Graduate Student Enrollment and Support in American Universities and Colleges, 1954*. NSF 57-17. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1957. 302 p. :
74. NATIONAL SCIENCE FOUNDATION. *Scientific Research and Development in Colleges and Universities: Expenditures and Manpower, 1953-54*. NSF 59-10. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1959. 173 p.
75. NATIONAL SOCIETY FOR THE STUDY OF EDUCATION. *The Integration of Educational Experiences*. Fifty-Seventh Yearbook, Part III. Chicago: University of Chicago Press, 1958. 278 p.
76. NATIONAL SOCIETY FOR THE STUDY OF EDUCATION. *The Public Junior College*. Fifty-Fifth Yearbook, Part I. Chicago: University of Chicago Press, 1956. 347 p.
77. NESS, FREDERIC W., editor. *A Guide to Graduate Study; Programs Leading to the Ph.D. Degree*. Washington, D. C.: Association of American Colleges, 1957. 335 p.
78. NICHOLSON, LOWELL S. *The Law Schools of the United States: A Statistical and Analytical Report Based on 136 Completed Questionnaires and on Inspections of 160 Law Schools*. Baltimore: Lord Baltimore Press, 1958. 245 p.
79. NIEBUHR, HELMUT RICHARD; WILLIAMS, DANIEL DAY; and GUSTAFSON, JAMES M. *The Advancement of Theological Education*. New York: Harper & Brothers, 1957. 239 p.
80. OREGON STATE DIVISION OF VOCATIONAL EDUCATION, TRADE AND INDUSTRIAL EDUCATION SERVICE. *A Survey of Technical Occupations in Oregon*. Salem: State of Oregon, March 1959. 20 p.
81. PERRY, RICHARD R. *Action Involving CEEB Advanced Placement Cases Taken by Oberlin College*. Toledo, Ohio: University of Toledo, 1958.
82. PIERSON, FRANK C., and OTHERS. *The Education of American Businessmen; A Study of University-College Programs in Business Administration*. New York: McGraw-Hill Book Co., 1959. 740 p.
83. POOLE, HAZEL C., compiler. *Resident, Extension, and Other Enrollments in Institutions of Higher Education: First Term, 1957-58*. U. S. Department of Health, Education, and Welfare, Office of Education, Circular No. 593. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1959. 73 p.
84. PRESIDENT'S COMMITTEE ON SCIENTISTS AND ENGINEERS. *Second Interim Report to the President*. Washington, D. C.: Superintendent of Documents, Government Printing Office, October 1957. 35 p.
85. QUATTLEBAUM, CHARLES A. *Development of Scientific Engineering, and Other Professional Manpower*. Atomic Energy Joint Committee, 85th Congress. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1957. 172 p.
86. ROSENHAUPT, HANS, and CHINLUND, THOMAS J. *Graduate Students: Experience at Columbia University, 1940-1956*. New York: Columbia University Press, 1958. 125 p.
87. ROSSKOPF, MYRON F. "Articulation of a Secondary School Mathematics Program with College." *California Journal of Secondary Education* 31: 97-102; February 1956.
88. RUSSELL, CHARLES H., compiler. *Liberal Education and Nursing; An Annotated Bibliography*. New York: Bureau of Publications, Teachers College, Columbia University, Institute of Higher Education, 1959. 152 p.
89. SCHMIDT, GEORGE P. *The Liberal Arts College: A Chapter in American Cultural History*. New Brunswick, N. J.: Rutgers University Press, 1957. 310 p.
90. SEBALY, AVIS L., editor. *Teacher Education and Religion*. Oneonta, N.Y.: American Association of Colleges for Teacher Education, 1959. 292 p.
91. SMITH, JOHN E. *Value Conviction and Higher Education*. New Haven, Conn.: Edward W. Hazen Foundation, 1958. 36 p.
92. SMITH, KEITH F. "Articulation in Science." *California Journal of Secondary Education* 33: 507-10; December 1958.
93. SMITH, LEO F., and LIPSETT, LAURENCE. *The Technical Institute*. New York: McGraw-Hill Book Co., 1956. 319 p.
94. STETSON UNIVERSITY. *Early Admission and Advanced Studies Program, Including a Summer Training Program in Mathematics for Secondary School Students*. Deland, Fla.: the University, 1959.

95. STEWART, WILLIAM BLAIR. *Liberal Arts and Medical Education*. Oberlin, Ohio: Oberlin College, 1957. 106 p.
96. STICKLER, WILLIAM HUGH. "Senior Courses in General Education." *Journal of Higher Education* 25: 139-46, 171; March 1954.
97. STROTHMANN, FRIEDRICH W. *The Graduate School Today and Tomorrow; Reflections for the Profession's Consideration*. New York: Fund for the Advancement of Education, 1955. 42 p.
98. SWEENEY, STEPHEN B., and DAVY, THOMAS J., editors. *Education for Administrative Careers in Government Service*. Philadelphia: University of Pennsylvania Press, 1958. 366 p.
99. TEMPLE UNIVERSITY. *General Education for Teachers*. Philadelphia: the University, 1959. 165 p.
100. TROWBRIDGE, HOYT. *General Education in the Colleges of Arkansas*. Little Rock: Arkansas Experiment in Teacher Education, 1958. 156 p.
101. U. S. DEPARTMENT OF LABOR, BUREAU OF LABOR STATISTICS. *Occupational Outlook Handbook*. Bulletin No. 1215. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1959. 697 p.
102. VAN ENGEN, HENRY. "Colleges, Schools, and the Mathematics Curriculum." *Journal of Engineering Education* 47: 239-43; November 1956.
103. VAN WAGENEN, RULON C. "Changing Concepts of Junior College Distributive Education." *Business Education Forum* 12: 19-20; April 1958.
104. WESTERN COLLEGE ASSOCIATION. *Transition from School to College; Annual Meeting, February 26-27, 1959*. Fresno, Calif.: the Association, 1959. 74 p.
105. WESTMINSTER SCHOOLS. *The Atlanta Experiment, A Progress Report*. Atlanta, Ga.: the Schools, 1956. 16 p.
106. WILCOX, EDWARD T. "Advanced Standing at Harvard College." *School and Society* 86: 354-57; October 11, 1958.
107. WILCOX, WALTER. *Liberal Education and Professional Journalism Education; A Study of Curricula Structure*. Iowa City: Graduate College, State University of Iowa, 1959. 49 p.
108. WILSON, OWEN MEREDITH. "Next Problem of Articulation: The Undergraduate College and the Professional and Graduate Schools." *Educational Record* 39: 124-28; April 1958.
109. WOLF, GEORGE A., JR. "Integration of the Last Year of College and the First Year of Medical School." *Journal of Medical Education* 32: 573-79; August 1957.
110. YALE UNIVERSITY. *Advanced Placement and Credit at Yale, A Three Year Statistical Study*. New Haven, Conn.: the University, 1958.
111. YALE UNIVERSITY. *Growth in Use of Advanced Placement Examinations by Yale Matriculants*. New Haven, Conn.: the University, 1958.

CHAPTER VI

The Improvement of Instruction

W. J. McKEACHIE

THIS IS a golden age for research on improvement of college instruction. With financial support available from the Fund for the Advancement of Education, the U.S. Office of Education, and other sources, with increasing willingness of college administrators and (at least some) faculties to experiment with teaching procedures, and with new research instruments, the amount of research in progress is greater than ever before.

Lecture Versus Discussion

Television and independent study are the glamour methods of the decade, but comparison of lecture to discussion goes on. Prior to 1954, evidence about the superiority of the one over the other was inconclusive. It is still inconclusive; for example, Eglash (13), Ruja (38), and Casey and Weaver (9) found no differences in knowledge of content, but found more positive changes in attitude (as measured by the *Minnesota Teacher Attitude Inventory*) among students in small discussion groups as opposed to those taught by the lecture method. Many universities and large colleges utilize both lecture meetings and discussion-class meetings. The feasibility of this arrangement is supported by the findings of Warren (50) and Lifson and others (24), in whose examples discussion meetings numbered one-third of the total. Although no significant differences in achievement emerged, the partial-discussion method resulted in more favorable student attitudes, which persisted in a follow-up study two years later.

Comparison of lecture and discussion is related to studies of class size, since large classes are ordinarily taught by lecture. Rohrer (37) found no significant differences in achievement between large lecture sections and smaller discussion sections. At Miami University significant differences favoring small classes were found on measures of change in misconceptions in psychology on a case test of problem-solving in a marketing course and on measures of student attitudes toward all courses involved (27, 28).

Discussion Methods

One of the healthy trends has been to recognize that "discussion" is not a single method, but several methods. Several experiments compared different styles of discussion, with particular emphasis on student-centered or "democratic" methods. Birney and McKeachie (3) listed some of the

dimensions commonly involved in comparisons of democratic and non-democratic discussions.

Following the model of Lewin, Lippitt, and White's study of authoritarian, democratic, and laissez faire group climates, the University of Michigan's general psychology staff (16) compared three styles of teaching: recitation, discussion, and group-tutorial. The autocratic recitation method produced superior performance on the final examination, and also produced greater interest in psychology, as measured by the election of advanced courses in psychology. Students preferred it to the other methods. In a freshman orientation course Burke (4) found performance of students in conventional classes numbering 125 superior to that of students in co-operative groups of four to seven. Moreover, this difference generalized to other courses. Lyle (25) found performance of students in a conventional class superior to that of students taught by a problem-oriented method. Smith (40) and Krumboltz and Farquhar (22), however, studying methods which varied in degree of directiveness, found no differences in their effects upon student learning and ability to make "applicational transfer" of learning.

Determination of the best basis for grading is a special problem for the teacher using student-centered instruction. Haines (17) found no significant achievement advantages for students working co-operatively versus those working competitively for grades, but did find a marked difference in morale which favored the co-operative groups. Smith (42), however, comparing a lecture class to a "teamwork" class in which group incentives were used, did not find differences in satisfaction comparable to those of Haines.

Patton (35) observed results in two classes in which there were no examinations, no lectures, and no assigned readings. Students decided on reading to do, class procedure to use, written work to perform, and method of grading. In comparison with a control group, these students (a) believed the course more valuable, (b) showed greater interest in psychology, and (c) gave more dynamic and motivational analyses of a behavior problem. Obtaining individual measures of acceptance of responsibility in the experimental classes, Patton found in addition that the degree to which the student accepted responsibility was positively correlated with gain in psychological knowledge, gain in ability to apply psychology, rating of the value of the course, and interest in psychology.

The most impressive findings on results of small-group discussion came from research on the Pyramid Plan at Pennsylvania State University (6, 12, 36). The basic plan may be represented by the experiment in teaching psychology, though other subject-matter classes were also used. Each Pyramid group of psychology majors consisted of six freshmen, six sophomores, two juniors (assistant leaders), and a senior (group leader). One control group consisted of students who simply took pre-test measures; another control group devoted the same amount of time to lectures, films, and

demonstrations that the Pyramid groups spent in discussion. The results on such measures as attitude toward psychology, scientific thinking, use of the library for scholarly reading, intellectual orientation, and resourcefulness in problem solving favored the Pyramid Plan. Moreover, a follow-up study showed that more of the Pyramid students continued as majors in psychology.

Also supporting less directive teaching is Thistlethwaite's finding (45) that there is a significant *negative* correlation between a college's productivity of Ph.D.'s in natural science and its students' description of their teaching as directive. This fits with the general conclusion that discussion methods which are relatively unstructured may be effective in developing long-term motivation.

Laboratory Teaching, Project Methods, and Independent Study

Lahti's experiment on methods of laboratory instruction (23) found that a problem-solving method was superior to traditional laboratory-manual methods in teaching students to apply principles of physics to interpret phenomena. He also found a problem-solving method superior to more conventional procedures in developing ability to design an experiment.

Recent interest in independent study as a means of freeing faculty time for more efficient use has brought to the fore the project method of teaching. Novak (31) found that students in conventional college botany classes learned more facts than those taught by the project method, which was particularly ineffective for those in the middle third of the group in intelligence. Similarly, Goldstein (14) reported that students taught pharmacology by a project method did not learn more than those taught in a standard laboratory. Since presumably the real superiority of the project method should be revealed in measures of motivation and resourcefulness, measures of achievement such as those used in these studies are probably not adequate to determine the method's special strengths. Timmel (47), however, found no difference in the effectiveness of the lecture and the project methods in changing adjustment of mental-hygiene students.

With the support of the Fund for the Advancement of Education, a number of colleges experimented with more elaborate programs of independent study. Few differences in achievement were found between students working independently and those taught in conventional classes. Moreover, the expected gains in independence generally failed to materialize (1, 10, 26).

Findings from a child-development course by Parsons (33) and Parsons, Ketcham, and Beach (34) were more favorable to independent study. In both the earlier and the later experiments, students working independently made the best scores on the final examination, which measured retention of factual material in the textbook. The instructor-led discussion groups

were lowest in performance on the final. The authors explained their results in terms of the independent group's freedom from the distractions of examples, applications, or points of view opposed to those presented in the text. Thus, to learn facts from a text, independent study appears to be effective. Similarly, Craig (11) found that students who were given direction in discovering relationships learned more and retained the relationships better than students given less direction.

The most encouraging results with independent study were obtained by Gruber and Weitman (15, 52). University of Colorado students in freshman English, physical optics, and educational psychology who spent part of the class time meeting in groups independent of the instructor were superior to students in conventional classes in such outcomes as making difficult applications, learning new materials, and curiosity.

To sum up: independent study is not a panacea, and we still know little about the types of students, teachers, previous training, or objectives necessary for its success.

Television

The results of research on instruction by television indicate that there is little loss in student learning in courses taught by television as compared with courses taught conventionally (7, 8, 27, 28). At Miami University (27, 28) live teaching proved superior to TV teaching in three out of 26 courses; the reverse was true in one course. In economics TV proved inferior in producing gains in the ability to solve problems and synthesize. Purdue University also found television instruction inferior to conventional instruction in mechanical engineering, military science (19), and, on some tests, calculus (39). But in most comparisons in these studies television has proved to be only slightly, if at all, inferior to conventional instruction. When a course demands the demonstration of small objects or parts, the use of television or film should be advantageous; at Rensselaer Polytechnic Institute (46) teaching a course in strength of materials by television was found not inferior to conventional methods in teaching instrumentation and specimen behavior, but was found inferior in teaching theory and familiarity with machinery.

Factors Unimportant in the Use of Educational Television

The heading of this section would normally be "Factors Conditioning the Effectiveness of Educational Television," but the results of the research are indicated by the title chosen. At Penn State (7, 8) two-way communication between television classrooms and the studio was not superior to simple television reception. The New York University research staff (20) used student observers to classify television students into high-

middle-, and low-attention groups, and found attention level unrelated to achievement. Studies of television instruction and discussion revealed no significant differences in test performances of students taught by different methods. A poll indicated students preferred two hours of lecture followed by a full period of discussion to a short discussion each period.

Size of the viewing group is not an important variable in television instruction. Proctors in the viewing rooms do not contribute to learning. A course adapted to television by addition of supplementary visual aids proved to be no more effective than televised lecture-blackboard presentations. Both at Penn State and at NYU the "visual" productions tended to be *less* effective than "bare bones" television. At Miami University (27, 28) student ability generally did not make a difference in the relative effectiveness of television. The better students, however, ordinarily disliked television and large classes more than the poorer students.

Despite the preponderance of findings of "no significant differences," one is not justified in concluding that there is no loss when a class is taught by television rather than in person. When one examines the direction of differences in the studies of television teaching, they are surprisingly consistent. In 20 of 26 well-controlled experiments the "live" class was superior to the television class. This consistency gives statistically significant support to the conclusion that one should expect some loss in learning if television is substituted for live instruction. Nevertheless, the results are also consistent in indicating that television's inferiority is relatively small for the teaching of simple factual knowledge.

In summary: television seems to be inferior to conventional instruction in most college courses, but the decrement is not great.

Testing and Knowledge of Results

Tests provide knowledge of results, a major element in learning, and we would expect that the more information contained in the feedback, the greater its value. In a U.S. Air Force experiment (44) performances were better after multiple-choice tests were returned with information about why the alternative chosen was wrong and why the correct alternative was right. This technique proved superior to four other techniques (among them, the usual method of giving only total score) which gave less complete knowledge of results.

In a remedial English course at Purdue University (29) students whose 40 themes were evaluated in class made greater improvement on a test of English usage than a group which had workbook drill and whose 14 themes were individually corrected by the instructor. May and Lumsdaine (30) reported that learning from film is also positively influenced by participation and feed-back devices.

The teaching machine is a device for presenting questions in a predetermined sequence and providing immediate knowledge of results to an active

learner. Despite the theoretical advantages of teaching machines, there has been little conclusive experimental evidence on their effectiveness as compared with other teaching. Until studies currently underway are completed, Pressy's studies, begun in the 1920's, apparently still provide the major empirical support for self-testing devices.

Student Characteristics Related to Effective Teaching

Possibly one of the reasons why experimental comparisons result in non-significant differences between teaching methods is simply that methods conducive to optimal achievement for some students are detrimental to the achievement of others. When mean scores are compared, one method thus seems to be no different in its effect from others.

We have already noted some analyses of teaching methods taking such individual differences into account; for example, Guetzkow, Kelly, and McKeachie (16) found that students differing in intelligence or in preferences for teaching methods were not affected differently by three methods. Macomber and Siegel's results (27, 28) did not oppose that finding, but revealed a tendency for high-ability students to gain more in course-related attitudes in small than in large sections. They also reported a small superiority in achievement in television or large classes among those who held favorable attitudes toward the method used. Ward's results (49) also suggested that the ablest students benefit most from small groups. Comparing group-study and lecture-demonstration methods in a physical-science course, he found that the group method resulted in better achievement on a measure of understanding and problem-solving among the abler students. The poor students, however, benefited more from lecture-demonstration. Calvin, Hoffmann, and Harden (5) found that less intelligent students do more effective problem-solving in authoritarian than in permissive groups. These differences did not prevail among bright students.

Patton (35) found that the degree to which the student accepted responsibility was positively correlated with gain in psychological knowledge, gain in ability to apply psychology, rating of the value of the course, and interest in psychology. What sort of student will accept responsibility? Patton observed that the students who liked his experimental class and assumed responsibility were likely to be independent of traditional authority figures and high in need for achievement. Koenig and McKeachie (21) also found that women high in need for achievement preferred independent study to lecture. Something similar may be involved in the suggestion in the Oberlin College experiments with independent study (26) that students who are less rigid and less in need of social support are likely to profit relatively more from independent study than other students.

Since anxiety is generally believed to be increased by uncertainty, we would expect the anxious person to work most effectively in a highly struc-

tured situation. This hypothesis is partially supported by the research of D. E. P. Smith and others (41), who found that anxious students who were permeable (extroverted) did make optimum progress in a remedial reading course when taught by directive methods. However, impermeable, anxious students were unaffected by difference in teaching methods. A study by H. C. Smith (42) found, on the other hand, that students with high anxiety and low initial achievement gained more on achievement tests and were more highly satisfied in a "teamwork" class than in a conventional lecture.

An Air Force experiment (18) on teacher-student interviews also revealed complex interactions. Although the interviews were not effective over-all in influencing achievement, anxious students tended to be helped by interviews, whereas rigid students were more likely to fail if interviewed. The results were further affected by type of interview: when students were encouraged to complain, the interaction noted was produced; interviews oriented toward the student's goals and sources of satisfaction did not produce the effect.

Watson (51) found no difference in the effects of permissive and restrictive teaching methods on students who differed in authoritarianism and anxiety, as measured by achievement tests. Students' satisfaction, however, was affected by teaching methods; highest satisfaction resulted when teaching was by a method appropriate to the student's needs. Bendig and Hountras (2) reported that authoritarian students prefer a high degree of departmental control of instruction.

Stern, Stein, and Bloom (43) found that students high in a sort of authoritarianism were found to gain more when taught in a homogeneous group. Pace and Stern (32), studying the relationship between student needs and the forces affecting students in differing colleges, observed their College Characteristics Index and Activities Index to reveal great differences between colleges in such characteristics as the tendency to support the need for order or the need for achievement. Presumably the effects of variations in teaching methods interact not only with student characteristics but also with aspects of the college's culture. Inconsistent results may simply reflect differences in the cultures in which the experiments have been conducted.

In summing up the studies on the interaction of personality characteristics and teaching methods as they affect learning, it is safe to say that no major breakthrough has occurred. Fortunately, multivariate statistical techniques now permit precise analysis of the sort of complex interactions which appear to be involved in teaching. In addition to student characteristics, instructor characteristics and content characteristics probably also interact with teaching methods. For example, the U.S. Army studies of educational television showed some instructors to be more effective in that medium than in face-to-face teaching. Similarly, the experiments of Wakely and others (48) indicated that some teachers are more

effective with the abler students than with the less able ones, and other instructors are more effective in teaching poor students. Such interactions pose exciting problems for investigation.

Summary

Recent research on the improvement of instruction has not resulted in clear-cut conclusions about the relative effectiveness of varying teaching methods. There are many findings of no significant differences. There are some indications that results of the measures of high-level cognitive and motivational outcomes show discussion in small classes where problem-solving techniques are used is superior to didactic lecture in large classes. Instruction by closed-circuit television seems to be slightly inferior to conventional instruction for most outcomes. It is possible that high-level goals may be achieved through independent study, but this method by no means guarantees good results. Interactions between teacher characteristics, teaching methods, student characteristics, and other variables appear to be significant determinants of instructional effectiveness, and they are likely to become increasingly a focus of research.

Bibliography

1. ANTIOCH COLLEGE. *Experiment in Independent Study*. Yellow Springs, Ohio: the College, 1958. 31 p. (Mimeo.)
2. BENDIG, ALBERT WILLIAM, and HOUNTRAS, PETER T. "Anxiety, Authoritarianism, and Student Attitude Toward Departmental Control of College Instruction." *Journal of Educational Psychology* 50: 1-7; February 1959.
3. BIRNEY, ROBERT, and McKEACHIE, WILBERT J. "The Teaching of Psychology: A Survey of Research Since 1942." *Psychological Bulletin* 52: 51-68; January 1955.
4. BURKE, HAROLD R. *An Experimental Study of Teaching Methods in a College Freshman Orientation Course*. Doctor's thesis. Boston: Boston University, 1955. 233 p. Abstract: *Dissertation Abstracts* 16: 77-78; No. 1, 1956.
5. CALVIN, ALLEN D.; HOFFMANN, FREDERICK K.; and HARDEN, EDGAR L. "The Effect of Intelligence and Social Atmosphere on Group Problem Solving Behavior." *Journal of Social Psychology* 45: 61-74; February 1957.
6. CARPENTER, C. RAY. "What are the Most Effective Methods of Improving Instruction, with Special Reference to Individual Work Programs?" *Current Issues in Higher Education*, 1959. Proceedings of the Ninth Annual National Conference on Higher Education. Washington, D.C.: Association for Higher Education, a department of the National Education Association, 1959. p. 187-196.
7. CARPENTER, C. RAY, and GREENHILL, LESLIE P. *An Investigation of Closed-Circuit Television for Teaching University Courses*. Instructional Television Research, Project I. University Park: Pennsylvania State University, 1955. 102 p.
8. CARPENTER, C. RAY, and GREENHILL, LESLIE P. *An Investigation of Closed-Circuit Television for Teaching University Courses*. Instructional Television Research, Project II. University Park: Pennsylvania State University, 1958. 110 p.
9. CASEY, JOHN E., and WEAVER, BILL E. "An Evaluation of Lecture Method and Small Group Method of Teaching in Terms of Knowledge of Content, Teacher Attitude, and Social Status." *Journal of the Colorado-Wyoming Academy of Science* 4: 54-47; No. 7, 1956.
10. CHURCHILL, RUTH. *Preliminary Report on Reading Course Study, 1956-1957*. Yellow Springs, Ohio: Antioch College, 1957. 8 p.
11. CRAIG, ROBERT C. "Directed Versus Independent Discovery of Established Relations." *Journal of Educational Psychology* 47: 223-34; April 1956.

12. DAVAGE, ROBERT H. *Recent Data on the Pyramid Project in Psychology*. University Park: Division of Academic Research and Services, Pennsylvania State University, 1959. 4 p. (Mimeo.)
13. EGLASH, ALBERT. "A Group-Discussion Method of Teaching Psychology." *Journal of Educational Psychology* 45: 257-67; May 1954.
14. GOLDSTEIN, AVRAM. "A Controlled Comparison of the Project Method with Standard Laboratory Teaching in Pharmacology." *Journal of Medical Education* 31: 365-75; June 1956.
15. GRUBER, HOWARD E., and WEITMAN, MORRIS. *Cognitive Processes in Higher Education: Curiosity and Critical Thinking*. Boulder: University of Colorado, 1960. 8 p. (Ditto.)
16. GUETZKOW, HAROLD; KELLY, E. LOWELL; and McKEACHIE, WILBERT J. "An Experimental Comparison of Recitation, Discussion, and Tutorial Methods in College Teaching." *Journal of Educational Psychology* 45: 193-207; April 1954.
17. HAINES, DONALD B. *Cooperative Versus Competitive Discussion Methods in Teaching Introductory Psychology*. Doctor's thesis. Ann Arbor: University of Michigan, 1960. 137 p. Abstract: *Dissertation Abstracts* 20: 4738-39; No. 12, 1960.
18. HOEHN, ARTHUR J., and SALTZ, ELI. "Effect of Teacher-Student Interviews on Classroom Achievement." *Journal of Educational Psychology* 47: 424-35; November 1956.
19. KASTEN, D. F., and SEIBERT, WARREN F. *A Study of Televised Military Science Instruction*. TVPR Report No. 9. Lafayette, Ind.: Purdue University, July 1959. 16 p.
20. KLAPPER, HOPE L. *Closed-Circuit Television as a Medium of Instruction at New York University*. New York: New York University, 1958. 69 p.
21. KOENIG, KATHRYN E., and McKEACHIE, WILBERT J. "Personality and Independent Study." *Journal of Educational Psychology* 50: 132-34; June 1959.
22. KRUMBOLTZ, JOHN D., and FARQUHAR, WILLIAM W. "The Effect of Three Teaching Methods on Achievement and Motivational Outcomes in a How-to-Study Course." *Psychological Monographs*, 1957. Vol. 71, No. 14. Whole No. 443. 26 p.
23. LAHTI, ARNOLD M. "The Inductive-Deductive Method and the Physical Science Laboratory." *Journal of Experimental Education* 24: 149-63; March 1956.
24. LIFSON, NATHAN; REMPEL, PETER; and JOHNSON, JOHN A. "A Comparison Between Lecture and Conference Methods of Teaching Physiology." *Journal of Medical Education* 31: 376-82; June 1956.
25. LYLE, EDWIN R. "An Exploration in the Teaching of Critical Thinking in General Psychology." *Journal of Educational Research* 52: 129-33; December 1958.
26. MCCOLLOUGH, CELESTE, and VAN ATTA, E. LOCHE. *Experimental Evaluation of Teaching Programs Utilizing a Block of Independent Work*. Oberlin, Ohio: Oberlin College, 1960. 6 p. (Ditto.)
27. MACOMBER, FREEMAN GLENN, and SIEGEL, LAURENCE. *Final Report on the Experimental Study in Instructional Procedures*. Oxford, Ohio: Miami University, 1960. 96 p.
28. MACOMBER, FREEMAN GLENN, and SIEGEL, LAURENCE. "A Study in Large Group Teaching Procedures." *Educational Record* 38: 220-29; July 1957.
29. MAIZE, RAY C. "Two Methods of Teaching English Composition to Retarded College Freshmen." *Journal of Educational Psychology* 45: 22-28; January 1954.
30. MAY, MARK A., and LUMSDAINE, ARTHUR A. *Learning from Films*. New Haven: Yale University Press, 1958. 357 p.
31. NOVAK, JOSEPH D. "An Experimental Comparison of a Conventional and a Project Centered Method of Teaching a College General Botany Course." *Journal of Experimental Education* 26: 217-30; March 1958.
32. PACE, D. ROBERT, and STERN, GEORGE G. "Five College Environments." *College Board Review* 41: 24-28; Spring 1960.
33. PARSONS, THOMAS S. "A Comparison of Instruction by Kinescope, Correspondence Study, and Customary Classroom Procedures." *Journal of Educational Psychology* 48: 27-40; January 1957.
34. PARSONS, THOMAS S.; KETCHAM, WARREN A.; and BEACH, LESLIE R. *Effects of Varying Degrees of Student Interaction and Student-Teacher Contact in College Courses*. Third paper, Session on Sociological Studies of Educational Problems, Durkheim-Simmel Centennial Meeting of American Sociological Society. Seattle: University of Washington, August 1958.

35. PATTON, JOSEPH A. *A Study of the Effects of Student Acceptance of Responsibility and Motivation on Course Behavior*. Doctor's thesis. Ann Arbor: University of Michigan, 1955. 168 p. Abstract: *Dissertation Abstracts* 15: 637-38; No. 4, 1955.
36. PENNSYLVANIA STATE UNIVERSITY, DIVISION OF ACADEMIC RESEARCH AND SERVICES. *A Short Progress Report on the Pyramid Plan for the Systematic Involvement of University Students in Teaching-Learning Functions*. University Park: the Division, 1958. 14 p. (Ditto.)
37. ROHRER, JOHN H. "Large and Small Sections in College Classes." *Journal of Higher Education* 28: 275-79; May 1957.
38. RUJA, HARRY. "Outcomes of Lecture and Discussion Procedures in Three College Courses." *Journal of Experimental Education* 22: 385-94; June 1954.
39. SEIBERT, WARREN F. *A Brief Report and Evaluation of Closed-Circuit Television Instruction in the First Semester Calculus Course*. Lafayette, Ind.: Audio Visual Center, Purdue University, 1957. 19 p.
40. SMITH, DONALD E. P. "Applicational Transfer and Inhibition." *Journal of Educational Psychology* 45: 169-74; March 1954.
41. SMITH, DONALD E. P., and OTHERS. "Reading Improvement as a Function of Student Personality and Teaching Method." *Journal of Educational Psychology* 47: 47-59; January 1956.
42. SMITH, HENRY C. "Team Work in the College Class." *Journal of Educational Psychology* 46: 274-86; May 1955.
43. STERN, GEORGE G.; STEIN, MORRIS I.; and BLOOM, BENJAMIN S. *Methods in Personality Assessment: Human Behavior in Complex Social Situations*. Glencoe, Ill.: The Free Press, 1956. 271 p.
44. STONE, G. RAYMOND. *The Training Function of Examinations: Retest Performance as a Function of the Amount and Kind of Critique Information*. Research Report No. AFPTRC-TN-55-8, VI. San Antonio, Tex.: Air Force Personnel and Training Center, Lackland AFB, 1955. 22 p.
45. THISTLETHWAITE, DONALD L. "College Environments and the Development of Talent." *Science* 130: 71-76; July 10, 1959.
46. THROOP, JOSEPH F.; ASSINI, LEWIS T.; and BOGUSLAVSKY, GEORGE W. *The Effectiveness of Laboratory Instructions in Strength of Materials by Closed-Circuit Television*. Troy, N.Y.: Rensselaer Polytechnic Institute, 1958. 41 p.
47. TIMMEL, GUSTAVE BERNHARDT. *A Study of the Relationship Between Methods of Teaching a College Course in Mental Hygiene and a Change in Student Adjustment Status*. Doctor's thesis. Ithaca, N.Y.: Cornell University, 1954. 149 p. Abstract: *Dissertation Abstracts* 15: 90; No. 1, 1955.
48. WAKELY, JOHN N., and OTHERS. *Lecturing and Test Performance in Introductory Psychology*. Ann Arbor: University of Michigan, March 1960.
49. WARD, JOHN N. "Group-Study versus Lecture-Demonstration Method in Physical Science Instruction for General Education College Students." *Journal of Experimental Education* 24: 197-210; March 1960.
50. WARREN, RICHARD. *A Comparison of Two Plans of Study in Engineering Physics*. Doctor's thesis. Lafayette, Ind.: Purdue University, 1954. 161 p. Abstract: *Dissertation Abstracts* 14: 1648-49; No. 10, 1954.
51. WATSON, RICHARD P. *The Relationship Between Selected Personality Variables, Satisfaction, and Academic Achievement in Defined Classroom Atmospheres*. Doctor's thesis. Ann Arbor: University of Michigan, 1957. 166 p. Abstract: *Dissertation Abstracts* 18: 1342; No. 4, 1958.
52. WEITMAN, MORRIS, and GRUBER, HOWARD E. *Experiments in Self-Directed Study: Effects on Immediate Achievement, Permanence of Achievement and Educational Values*. Boulder: University of Colorado, 1960. 7 p. (Ditto.)

CHAPTER VII

Noninstructional Services

DANIEL D. FEDER and DANIEL J. SILLERS

A RECENT publication of the American Council on Education (18) lists the following college and university personnel services: selection for admission, registration and records, counseling, health service, housing and food service, student activities, financial aid, placement, discipline, special clinics (remedial reading, study habits, speech, and hearing), and special services (student orientation, veteran advisory services, foreign-student program, marriage counseling, and religious activities and counseling). Counseling services were discussed in a recent issue of the REVIEW (3); admission and selection are treated in Chapter II of this issue. These areas, therefore, are omitted from this chapter, which deals mainly with research in programs and evaluation of student personnel services.

Housing

The tremendous growth in research in housing and food services was reflected by Keegan's bibliography (40). The articles covered problems from residence-hall construction to food services, counseling programs, and housing for married students. The housing of married students on the campus brought changes in the style and units of construction, the controls necessary for families living contiguously, and the scheduling of activities of interest to families (24).

A bulletin of the American Institute of Architects (4) comprehensively summarized recent research in construction and assembled the ideas of architects, business officers, housing officials, and student-personnel administrators. Riker (53) drew data from the U.S. Office of Education files, interviews, questionnaires, personal inspection, and reports from the U.S. Housing and Home Finance Agency to develop a checklist of arrangements and facilities an institution should consider as it evaluates its building plans and the effects of facilities upon students.

Increased consideration was given to housing as it affects the student's educational and social development (23, 53, 63). Evaluation of counseling programs established in residence halls indicated that students who brought problems to residence counselors were largely seeking information—that they were concerned with housing regulations, academic rules and procedures, and interpersonal adjustment to dormitory living (16, 39).

Nevison (50) evaluated the differing perceptions of the counselor by the students and by the counselor himself. Both perceived the residence-hall counselor as a resource person, an aid in emergencies, and a stimulator

of residents' activities. They agreed also that the most important personality traits for counselors are emotional maturity, social poise, and friendliness. Walthall (68) found that graduate counselors established rapport faster and retained confidence longer than did undergraduate counselors. Griffeth (31) concluded that the type of housing facility has no effect on undergraduate women's achievement. Findings for men were not so clearly established.

The use of food-services facilities in the development of social skills of residents and as training laboratories for classes in institutional management was studied by West and Wood (69) and Riker (53). Gee (26) found that a single menu had no advantage over a multiple menu in relation to either cost or student morale.

Social and Extraclass Activities

Newly developed intramural sports programs were based on analysis of student needs (6), but many such programs seemed doomed to failure because of lack of financial support to carry on the diversified program necessary to meet those needs (29).

James (37) and Siske (60) found that social fraternities and sororities foster a democratic atmosphere. The least fulfilled objective of fraternal organizations was the development of a sense of responsibility to self and to the spiritual values in life. This finding was substantiated by Yardley (72) and Henderson (34). All concluded that social fraternities and sororities can, but do not always, make a worthwhile contribution to the over-all objectives of higher education.

Tinney (64) reported these trends in the educational role of the student union: (a) The work done by the student is for experience. (b) The union is used as a laboratory. (c) There is demand for higher standards of training and experience for the union staff. (d) There is need for the union to integrate more with the larger campus community. Minahan (47) found that—regardless of sex, place of college residence, or year of graduation—graduates who participated in the union program are more active participants in the life of their communities and are more active politically than graduates who did not participate.

Greenleaf (30) found that the number of leaders in student activities increases as enrollment increases, but the percentage of leaders in relation to the whole student body decreases. Through counseling it was possible to limit the overparticipation of the few and spread out participation, without the need for rigid mechanical regulations.

Murray (49) found that the areas of greatest tension as perceived by students are, in descending order: (a) registration lines, (b) eating facilities, (c) student-faculty relationships, (d) scholarship, (e) dormitory regulations, (f) boy-girl relations, (g) popularity polls, (h) sorority-fraternity affiliation, (i) skin-color difference, and (j) car parking.

Financial Aid and Student Employment

The increasing part that the college or university plays in assisting students financially is reflected in the *Second Report to the President on education beyond the high school* (52) and in the Rockefeller report on education (54). Up-to-date information on the availability and extent of scholarships, fellowships, and loans is dispensed by both public and private agencies (19, 35, 44, 70). Babbidge's manual (5) provides complete guidelines for student-aid officers and an excellent bibliography.

Superior scholarship and greater participation in activities by students who are free from immediate financial pressure were observed (13). Two studies (11, 65) reported no significant differences in grade averages between working and nonworking students. In coeducational institutions with enrollments of fewer than 2000, all financial aid is most often under the direction of the student personnel office (9). Most of the reporting institutions had not developed a policy regarding the place of part-time employment in the educational program.

Placement and Follow-up

Little program research in placement was published. Brown (10) found that 27 percent of college graduates were working in their chosen vocations; another 27 percent were in jobs unrelated to their vocational choice; 10 percent were unemployed. Christensen and Swihart (12) found all women graduates wishing eventually to marry, but 62 percent believed they should work in order to capitalize on their college education.

Health Services

Despite claims that important functions of health services are to teach, protect, and promote health, Felton (20) found only a minimum of teaching being carried on. Henderson (33) reviewed a number of cases involving legal problems in relation to obtaining consent for treatment, and believed the blanket-consent authority for students entering school to be insufficient. Failure to supply the patient with all pertinent information about a contemplated procedure as a basis for decision invalidates his consent.

Religious Activities and Counseling

There was increasing awareness of the part of religion in the educative process (2). Ferm (21) found only two departments of religion in state universities in 1927, but by 1956 there were 30 such departments. Funk (25), Gilliland (27), Jacob (36), and Lagey (42) concluded that student attitudes were changed toward a greater humaneness, and saw an increase

in church membership. Mott's findings (48) indicated greater need on the part of institutions for religious orientation. One growing approach (43) is the introduction of religious values into subject-matter presentations.

Scarborough and Wright (55) found that a university's religious-emphasis week increased students' interest in religion but had no lasting effects on their philosophy or understanding. Jansen (38) reported the abandoning of compulsory religious convocations in Catholic colleges for men. He noted the development of greater permissiveness in student-affairs administration. Taylor (62) contended that religious counselors, because they are trained primarily as religious thinkers, should co-operate with counseling and personnel workers rather than attempt independent operation.

Orientation

A number of surveys attempted to determine the effectiveness of programs designed to help the student adjust to the experience of college (15, 28). Zander (73) found an orientation-camp program effective in helping students to understand the objectives of higher education. A recent trend moved orientation to the high-school or precollege clinics. Lowenstein and Hoppock (45) believed such early effort effective in improving grades and adjustment to school, and believed it helped those who should not attend college to choose their goals. Stone and West (61) found that some tests given during orientation week do not give a true picture of the student.

Other Services

Feder and Ross (17), surveying research in psychological services, noted the widespread acceptance of psychological services on the college level as a unique aspect of American higher education. They were critical of the paucity of program research even in the more highly professionalized areas of psychological functions. No additional significant program research has been published since their survey.

Adams (1) surveyed nationally the programs and operations of reading clinics sponsored by teacher-training institutions. Kingston and George (41) found special-reading training valuable to students other than those diagnosed as needing it. Blake (7) found compulsory study-skills courses for probationary students to be beneficial. Given as noncredit courses in most colleges, the courses were believed helpful by a majority of students. Little research has been done with study-skills programs, and they have grown up because of demands from increased enrollments.

Condon (14) concluded that special facilities for the physically handicapped in colleges are generally inadequate.

In a study of student disciplinary programs at 10 universities, Truitt (66) found it desirable that students, administrators, and faculty partici-

pate jointly in the operation of a disciplinary program. Student personnel officers were agreed that the over-all function of the program should be preventive and remedial, such agreement marking a distinct change in philosophical orientation.

Evaluating the educational programs for foreign students, Bohn (8) found them unable to match American students in many of the abilities necessary for efficient class work. Schuiteman (56) studied Colombian nationals who attended U.S. colleges and found that their purposes for studying in the United States were fulfilled, that they had realigned themselves to their homeland and had improved occupational status, and that their worst impression of the United States was of race prejudice and discrimination.

Evaluation of Student Personnel Services

Interest in program research in student personnel services increased. Hage (32) reduced the *Rackham Student Personnel Services Inventory* from 848 items to 328, and obtained a correlation of plus .96 between the revised version and the original.

Fitzgerald (22) and Shaffer (57) found that faculty perceptions of student personnel programs are based on the relationship of faculty members to such programs and their knowledge of them. Shigley (59) saw need for more effective communication originating in the student personnel offices. Mahler (46) found that faculty reactions to student personnel services were more favorable than reactions of students. Shannon (58) found a strength of church-related colleges to be recognition of the individual, although inadequate finances left special services lacking.

Vogel (67), studying colleges' concepts and practices in allocating student personnel responsibilities, found student personnel administrators generally believed that the "personnel point of view" requires integration of all factors involved in the student's educational experience. Sharp divisions are usually made among academic, business, and personnel functions, and wide differences obtain in the patterns by which personnel functions are integrated or co-ordinated.

Summary

Little research in student personnel services amounts to more than the surveying of the most common or "best" practices. The need is to find ways of improving operational effectiveness. Differences in psychosocial "climates" as reported in Chapter III suggest that a variety of factors may be at work in any given situation. To evaluate such factors under conditions which will permit the control of significant variables requires research design of the type suggested by Pepinsky (51), which takes account of observable antecedent conditions and mediating conditions, and evaluates in terms of observable consequences.

There is little evidence as to the validity of certain stereotypes of organization and function which have been adopted in student personnel practices. More research with controlled experimental groups or study of similar institutions with some variation of program should be carried on in order to validate the assumptions under which present programs are operating. Determination of what constitutes "best" practice includes not only the influencing of student attitudes but also faculty acceptance of programs.

The tendency to lean heavily on surveys of practices may in itself stifle organizational and operational experimentation. The unevaluated acceptance of majority practice may superimpose a structure or function which may not be in keeping with the nature and needs of the institution's faculty and student body. In this very trend may lie the cause for the absence of reports of significant departure from established patterns of student personnel services.

Although there appears to be substantial evidence of change in attitude of students toward traditional college-life patterns (71), there is not concomitant evidence of changing patterns of related services. The presumed values of student government and other extraclass activities have not been sufficiently analyzed. Whether decreased student interest in these functions is due to heavier academic pressures, changing perceptions of needs, or general dissatisfaction with the values derived has not been determined. Similarly, whether the conscious restructuring of such aspects of campus life would alter their values has not been tried under conditions of controlled experimentation.

Promising evaluative technique is the effort to gauge the perceptions of students and others of the service programs and their operations (22, 57). This methodology makes it possible to determine "anchor points" against which the effects of changes in programs or operations may be measured. Such studies also may provide bases for determining steps to correct misapprehensions concerning services or may indicate changes required to meet changes in clientele needs.

The increased awareness of the need for evaluative study of program operations may be a sign of increased security of student personnel workers in the higher-education complex. It also appears to be a correlate of the increased numbers of professionally prepared persons who have entered the field in the last decade. With professional preparation, inevitably they would tend to question the validity of practices which are neither based on data nor pragmatically evaluated.

Bibliography

1. ADAMS, OLIN L., JR. *A Study of College and University Reading Clinics Serving Elementary and Secondary School Pupils*. Doctor's thesis. College Park: University of Maryland, 1958. 236 p. Abstract: *Dissertation Abstracts* 20: 210; No. 1, 1959.

2. ALLEN, HENRY E. "Practices of Land-Grant Colleges and State Universities Affecting Religious Matters." *School and Society* 76: 359-63; December 6, 1952.
3. AMERICAN EDUCATIONAL RESEARCH ASSOCIATION. "Guidance and Counseling." *Review of Educational Research* 30: 93-179; April 1960.
4. AMERICAN INSTITUTE OF ARCHITECTS, DEPARTMENT OF EDUCATION AND RESEARCH. *College Housing: An A.I.A. Building Type Reference Guide*. New York: the Institute, 1956. 40 p.
5. BABBIGE, HOMER D. *Student Financial Aid: Manual for Colleges and Universities*. Washington, D.C.: American College Personnel Association, 1960. 56 p.
6. BIERHAUS, FREDERICK W. *The Organization and Administration of Intramural Sports for Men in Selected Colleges and Universities*. Doctor's thesis. Boulder: University of Colorado, 1956. 240 p. Abstract: *Dissertation Abstracts* 17: 2204; No. 19, 1957.
7. BLAKE, WALTER S., JR. "Do Probationary College Freshmen Benefit from Compulsory Study Skills and Reading Training?" *Journal of Experimental Education* 25: 91-93, September 1956.
8. BOHN, RALPH CARL. *An Evaluation of the Educational Program for Students from Foreign Countries: Emphasis Upon Orientation Procedures, Individual Problems, and Psychological Variables*. Doctor's thesis. Detroit: Wayne State University, 1957. 361 p. Abstract: *Dissertation Abstracts* 18: 1344; No. 4, 1958.
9. BRANTLEY, EDWARD J. "A Study of Part-Time Student Employment." *Journal of Higher Education* 28: 161-63; March 1957.
10. BROWN, WILLIAM H. "Vocational Aspirations of Seniors at North Carolina College: A Follow-Through Study." *College and University* 30: 313-23; April 1955.
11. BUDD, WILLIAM C. "Counselor Versus Student Prediction of Grade Point Average." *Journal of Counseling Psychology* 3: 68-70; Spring 1956.
12. CHRISTENSEN, HAROLD T., and SWIHART, MARILYNN M. "Postgraduation Role Preferences of Senior Women in College." *Marriage and Family Living* 18: 52-57; February 1956.
13. CLARK, SELBY G.; WRIGHT, WAYNE E.; and PARKER, CLYDE A. "Do Renewable Scholarships Promote Higher Grades?" *Personnel and Guidance Journal* 35: 302-305; January 1957.
14. CONDON, MARGARET E. "A Survey of Special Facilities for the Physically Handicapped in the Colleges." *Personnel and Guidance Journal* 35: 579-83; May 1957.
15. COPELAND, THEODORE H. *Freshman Orientation Programs: A Study of Their Development and Present Status with Special Reference to Middle Atlantic Colleges*. Doctor's thesis. Philadelphia: Temple University, 1954. 249 p.
16. CUNINGGIM, MARGARET LOUISE. *Dormitory Counseling Programs in Selected Colleges and Universities Which Utilize Undergraduate Women Counselors*. Doctor's thesis. Evanston: Northwestern University, 1958. 221 p. Abstract: *Dissertation Abstracts* 19: 1265; No. 6, 1958.
17. FEDER, DANIEL D., and ROSS, GLENN ROBERT. "Psychological Services—College and University." *Encyclopedia of Educational Research*. Third edition. (Edited by Chester W. Harris.) New York: Macmillan Co., 1960. p. 1063-66.
18. FEDER, DANIEL D., and OTHERS. *The Administration of Student Personnel Programs in American Colleges and Universities*. American Council on Education Studies. Series VI, Student Personnel Work, Vol. 22, No. 19. Washington, D.C.: American Council on Education, February 1958. 46 p.
19. FEINGOLD, S. NORMAN. *Scholarships, Fellowships, and Loans*. Cambridge, Massachusetts: Bellman Publishing Co., 1955. Vol. 3, 471 p.
20. FELTON, JEAN SPENCER. "Student and Employee Health Services and Medical Centers, Results of a Survey." *Proceedings of the 35th Annual Meeting of the American College Health Association, Bulletin No. 37*. Ithaca, N.Y.: the Association, 1957. p. 21-25.
21. FERM, DENAE W. "Teaching Religion in a State University." *Religious Education* 51: 286-89; July 1956.
22. FITZGERALD, LAURINE E. *A Study of Faculty Perceptions of Student Personnel Services*. Doctor's thesis. East Lansing: Michigan State University, 1959. 288 p. Abstract: *Dissertation Abstracts* 20: 3152; No. 8, 1960.
23. FRITZ, ROGER JAY. *A Comparison of Attitude Differences and Changes of College Freshman Men Living in Various Types of Housing*. Doctor's thesis. Madison: University of Wisconsin, 1956. 125 p. Abstract: *Dissertation Abstracts* 16: 2071-72; No. 11, 1956.

24. FULTS, DAN ANDERSON. *An Inquiry into the Housing Status and Housing Needs of Married Students at Indiana University, 1958*. Bloomington: Indiana University, 1958. 163 p. Abstract: *Dissertation Abstracts* 19: 2002; No. 8, 1958.
25. FUNK, RUTH ANNE. *A Survey of Religious Attitudes and Manifest Anxiety in College Population*. Doctor's thesis. West Lafayette, Ind.: Purdue University, 1955. 142 p. Abstract: *Dissertation Abstracts* 15: 2569; No. 12, 1955.
26. GEE, CHUCK YIM. *An Analysis of Menu Selectivity Factors in Selected Residence Hall Food Services*. Master's thesis. East Lansing: Michigan State University, 1958. 78 p.
27. GILLILAND, A. R. "Changes in Religious Beliefs of College Students." *Journal of Social Psychology* 37: 113-16, February 1953.
28. GLOGAU, ARTHUR H. "A Survey of Freshman Orientation Courses in Teacher Education." *Journal of Teacher Education* 5: 315-16; December 1954.
29. GRAMBEAU, RODNEY JAMES. *A Survey of the Administration of Intramural Sports Programs for Men in Selected Colleges and Universities in North and South America*. Doctor's thesis. Ann Arbor: University of Michigan, 1959. 226 p. Abstract: *Dissertation Abstracts* 20: 1669; No. 5, 1959.
30. GREENLEAF, ELIZABETH A. "Student Leadership in a Program of Co-Curricular Activities." *Personnel and Guidance Journal* 35: 293-97; January 1957.
31. GRIFFETH, PAUL LYMAN. *Type of Residence as a Factor in Academic Achievement at the State University of Iowa*. Doctor's thesis. Iowa City: State University of Iowa, 1958. 161 p. Abstract: *Dissertation Abstracts* 19: 1617; No. 7, 1959.
32. HAGE, ROBERT SILVERS. *A Revision of the Rackham Student Personnel Services Inventory*. Doctor's thesis. Iowa City: State University of Iowa, 1957. 200 p. Abstract: *Dissertation Abstracts* 18: 119; No. 1, 1958.
33. HENDERSON, JOSEPH B., JR. "Legal Problems in Consent to Treatment." *Student Medicine* 7: 176-83; February 1959.
34. HENDERSON, JOHN WAYNE. *A Follow-Up Study of the Members of Greek Letter Social Fraternities at Michigan State University*. Doctor's thesis. East Lansing: Michigan State University, 1958. 222 p. Abstract: *Dissertation Abstracts* 19: 261; No. 2, 1958.
35. HOLLIS, ERNEST V. *Costs of Attending Colleges: A Study of Student Expenditures and Sources of Income*. U. S. Department of Health, Education, and Welfare, Office of Education, Bulletin 1957, No. 9. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1957. 91 p.
36. JACOB, PHILIP E. *Changing Values of College: An Exploratory Study of the Impact of College Teaching*. New York: Harper & Brothers, 1957. 174 p.
37. JAMES, JO ANN. *The National Social Sorority: Its Administrative Relationships and the Scope of its Activities on the Contemporary College and University Campus*. Doctor's thesis. Syracuse: Syracuse University, 1958. 322 p. Abstract: *Dissertation Abstracts* 20: 563-64; No. 2, 1959.
38. JANSEN, JOHN J. *Personnel Services in Catholic Four Year Colleges for Men*. Washington, D. C.: Catholic University of America Press, 1955. 244 p.
39. JOHNSON, JO ANNE. "Problems Voluntarily Taken by Students to Residence Hall Counselors." *Personnel and Guidance Journal* 37: 296-98; December 1958.
40. KEEGAN, MARY LOU. *A Review and Summary of Literature Dealing with Housing and Food Service in Colleges and Universities*. Master's thesis. East Lansing: Michigan State University, 1956. 181 p.
41. KINGSTON, ALBERT J., JR., and GEORGE, CLAY E. "The Effects of Special Reading Training Upon the Development of College Students' Reading Skills." *Journal of Educational Research* 50: 471-75; February 1957.
42. LAGEY, JOSEPH C. "Social Factors Related to Attitude Change in Students." *Sociology and Social Research* 39: 401-403; July 1955.
43. LIMBERT, PAUL M., editor. *College Teaching and Christian Values*. New York: Association Press, 1951. 187 p.
44. LOVEJOY, CLARENCE C., and JONES, THEODORE S., compilers. *Lovejoy-Jones College Scholarship Guide*. New York: Simon and Schuster, 1957. 122 p.
45. LOWENSTEIN, NORMAN, and HOPPOCK, ROBERT. "High School Occupations Course Helps Students Adjust to College." *Personnel and Guidance Journal* 34: 21-23; September 1955.
46. MAHLER, CLARENCE ANGUS. *A Study of Student and Faculty Reactions to Student Personnel Work*. Doctor's thesis. Minneapolis: University of Minnesota, 1955. 214 p. Abstract: *Dissertation Abstracts* 15: 2571; No. 12, 1955.

47. MINAHAN, ANNE L. *The College Union and Preparation for Citizenship*. Ithaca, N. Y.: Association of College Unions, 1957. 32 p.
48. MOTT, JOHANNA K. *Religious Interests of College Students at the University of Oklahoma*. Doctor's thesis. Norman: The University of Oklahoma, 1957. 131 p. Abstract: *Dissertation Abstracts* 17: 1827; No. 8, 1957.
49. MURRAY, WALTER I. "Conflict and Tension Areas on the Campus." *School and Society* 80: 168-69; November 1954.
50. NEVISON, MYRNE BURDETTE. *Differing Perceptions of Residence Counseling*. Doctor's thesis. Minneapolis: University of Minnesota, 1957. 234 p. Abstract: *Dissertation Abstracts* 18: 153; No. 1, 1958.
51. PEPINSKY, HAROLD B. "Research on the Student in His Educational Setting." *Personnel Services in Education*. Fifty-Eighth Yearbook, National Society for the Study of Education. Chicago: University of Chicago Press, 1959. p. 231-46.
52. PRESIDENT'S COMMITTEE ON EDUCATION BEYOND THE HIGH SCHOOL. *Second Report to the President, July 1957*. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1957. 114 p.
53. RIKER, HAROLD C. *Planning Functional College Housing*. New York: Bureau of Publications, Teachers College, Columbia University, 1956. 240 p.
54. ROCKEFELLER BROTHERS FUND. *The Pursuit of Excellence: Education and the Future of America*. New York: Doubleday and Co., 1958. 48 p.
55. SCARBOROUGH, BARRON B., and WRIGHT, JOHN C. "Assessing the Results of a University Religious Evaluation Week." *Religious Education* 51: 282-85; July 1956.
56. SCHUITEMAN, ROBERT ALLEN. *A Study of Colombian Nationals Who Attended Collegiate Institutions in the United States*. Doctor's thesis. Ann Arbor: University of Michigan, 1957. 279 p. Abstract: *Dissertation Abstracts* 18: 1308-1309; No. 4, 1958.
57. SHAFFER, ROBERT H. "Problems of Communication on the Expanding College Campus." *Journal of the National Association of Women Deans and Counselors* 22: 56-60; January 1959.
58. SHANNON, ERNEST BOYD. *Personnel Services Extended to Students of Selected Church-Related Colleges in Solving Their Problems*. Doctor's thesis. Norman: The University of Oklahoma, 1955. 251 p. Abstract: *Dissertation Abstracts* 15: 2135; No. 11, 1955.
59. SHIGLEY, E. HAROLD. *An Evaluation of Student Personnel Services at Marion College*. Doctor's thesis. Bloomington: Indiana University, 1958. 244 p. Abstract: *Dissertation Abstracts* 19: 1018; No. 5, 1958.
60. SISKE, JAMES HARDING. *The Development of the Guidance Concept in the College Social Fraternity*. Doctor's thesis. Charlottesville: University of Virginia, 1956. 722 p. Abstract: *Dissertation Abstracts* 17: 805; No. 4, 1957.
61. STONE, DAVID R., and WEST, LEROY L. "First Day Orientation Testing with the Minnesota Multiphasic Personality Inventory Contrasted with a Re-test." *Journal of Educational Research* 49: 621-24; April 1956.
62. TAYLOR, PAUL LAWRENCE. *An Analysis of Religious Counseling Practices of Nine Selected Negro Colleges*. Doctor's thesis. Bloomington: Indiana University, 1958. 200 p. Abstract: *Dissertation Abstracts* 19: 2400-2401; No. 9, 1959.
63. THOMPSON, S. EARL. "Trends in Housing College Students." *Journal of Higher Education* 24: 323-26; June 1953.
64. TINNEY, HILDA. "The Educational Role of the Union." *The Bulletin of the Association of College Unions* 22: 9-12; May 1955.
65. TRUEBLOOD, DENNIS L. "The Effects of Employment on Academic Achievement." *Personnel and Guidance Journal* 36: 112-15; October 1957.
66. TRUITT, JOHN WILLARD. *A Study of Student Disciplinary Programs in Ten Selected Universities*. Doctor's thesis. East Lansing: Michigan State University, 1955. 201 p. Abstract: *Dissertation Abstracts* 15: 1537-38; No. 9, 1955.
67. VOGEL, FRED J. *A Study of Concepts and Practices Relating to the Allocation of Certain Student Personnel Responsibilities in Selected Institutions of Higher Learning in the United States*. Doctor's thesis. Tallahassee: The Florida State University, 1958. 178 p. Abstract: *Dissertation Abstracts* 18: 1705-06; No. 5, 1958.
68. WALTHALL, NANCY. *A Study of the Effectiveness of the Resident Counselor in the Adjustment of a Selected Group of Freshman Women*. Evanston: Northwestern University, 1957. 267 p. Abstract: *Dissertation Abstracts* 17: 2944; No. 12, 1957.

69. WEST, BESSIE B., and WOOD, LEVELLE. *Food Service in Institutions*. Third edition. New York: John Wiley & Sons, 1955. 682 p.
70. WILKINS, THERESA B. *Financial Aid for College Students: Undergraduate*. U. S. Department of Health, Education, and Welfare, Office of Education, Bulletin 1957, No. 18. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1957. 232 p.
71. WISE, WILLIAM MAX. *They Come for the Best of Reasons: College Students Today*. Washington, D. C.: American Council on Education, 1958. 65 p.
72. YARDLEY, WILLIAM AUGUSTUS. *An Analysis of Greek Letter Social Fraternities as a Factor in Student Life at the Ohio State University*. Doctor's thesis. Columbus: Ohio State University, 1953. 233 p.
73. ZANDER, DONALD RICHARD. *The Influence of an Orientation Program on Attitudes Toward Higher Education*. Doctor's thesis. Minneapolis: University of Minnesota, 1959. 182 p. Abstract: *Dissertation Abstracts* 20: 1276-77; No. 4, 1959.

CHAPTER VIII

Evaluations of Institutions and Programs

DEWEY B. STUIT

EVALUATION of colleges and universities, and of their programs, has received considerable attention since Pace and Wallace's discussion (42) in the REVIEW. The establishment of bureaus of institutional research, the support of institutional self-studies by the Fund for the Advancement of Education, the review of accreditation procedures, and the growing concern about quality in higher education have all contributed to a heightened interest in institutional evaluation. Although the actual results achieved thus far are not impressive, the current interest in, and support for, institutional evaluation bode well for the decade ahead.

Problems of Evaluation

Evaluation is difficult and involved. First, the dimensions or facets of quality to be evaluated must be decided. Is a college to be judged by the caliber of students which it enrolls? By changes (intellectual, personal, attitudinal) produced in students? By the quality of its teaching? By number of Ph.D.'s on the faculty? By the number of books and articles its faculty has published? By achievements of alumni? By the size of the endowment fund? By its age and traditions? Before evaluation is attempted, decisions must be made as to which of these dimensions are crucial. Most educators would probably agree, in theory, that an institution should be judged by the quality of its products. In practice, however, this is not the approach most frequently employed.

Once the dimensions of quality have been agreed upon, the next problem is to choose techniques or devices to measure these dimensions. Is student aptitude to be measured by psychological tests? Is student achievement to be measured by standardized achievement tests? Are student opinions to be employed in the assessment of teaching? Is alumni success to be measured by amount of salary earned? As is well stated by Stecklein (60), judgment must be exercised in determining the best techniques of observation or measurement which are to be employed—but these judgments are not easy to make.

After measurements have been obtained, the task is to interpret data. If the average rank in high-school graduating class of a group of entering freshmen is 75—is this average, high, or low? If the average number of articles which has been published by faculty members of a college is two—is this number normal? If 5 percent of the graduating seniors of a college go on to graduate school—is this the proportion to be expected?

These and many other questions are difficult to answer without normative data. If normative data were available by type of institution, by region, and by type of financial support and control, the interpretation of ratings and test scores and other statistics would be facilitated.

The process of interpretation needs, in addition to normative data, information about the quality of student input. Holland (25) pointed out that the records of some institutions in producing scholars and scientists are probably attributable as much to the abilities of students as to the quality of the educational experiences provided by these institutions. McConnell and Heist (32) observed evidence that colleges and universities differ in terms of the personality characteristics of their students. These student differences, intellectual and personal, affect the quality of the end products and hence must be considered in any program of institutional evaluation.

Finally, it is imperative to consider the institution's objectives when evaluating its performance. This point was stressed by Bloom (5), Pace (41), and Hagen and Thorndike (19). Even among colleges of the same general type (for example, liberal-arts), there are differences in objectives. For this reason evaluation must be conducted within relatively homogeneous types of institutions if fair and meaningful comparisons are to be made. And it should go without saying that, before evaluation can begin, there must be clear-cut statements of institutional objectives.

Existence of these problems was made evident by various studies. Stuit, Helmstadter, and Frederiksen (66), reviewed and analyzed college evaluation problems, methods, and needs for the following areas: institutional objectives, the curriculum, the faculty, the student body, student personnel services, and comprehensive or over-all evaluations.

Both the general problems of evaluation in higher education and the specific problems in such fields as critical thinking, communications, the humanities, the natural sciences, and the social sciences were discussed in a conference at Florida State University (36). It was pointed out that measuring the performance of an institution differs from measuring the performance of individuals, since changes in groups can be more reliably measured than changes in individuals.

Dressel and Mayhew (11) dealt with the problems involved in constructing tests to measure outcomes of instruction in general education. (Fuller discussion of the study appears under the heading "Co-operative Studies" in this chapter.) Pattillo (43) pointed out some of the confusion which exists regarding the use of qualitative versus quantitative standards in evaluation.

In addition to difficulties of measurement, communication is a problem. A number of colleges and universities make studies deemed to be primarily of local interest and do not publish the results. The Office of Statistical Information and Research of the American Council on Education (1), however, reported some such research, and Hatch (22, 23) edited a series of

reports for the U.S. Office of Education summarizing research at various institutions. These publications should be increasingly helpful in aiding communication.

Accreditation

A function of accreditation is to establish and define appropriate criteria and to apply these criteria to individual institutions or programs of study. *Accrediting of Colleges and Universities in the Coming Decade* (64) pointed out that accrediting, as presently practiced, is not immediately concerned with identifying the fraudulent or with recognizing excellence. Primarily, accreditation is concerned with distinguishing between the competent and the "not quite competent." The accreditation of an institution, therefore, implies acceptable performance—not necessarily (indeed rarely) superior performance.

Accreditation as a "force" in American higher education was studied by a number of persons and agencies. The history of accreditation, its problems, and its contribution to higher education were fully discussed by Selden (53). Nevins (38) described in detail the accreditation policies and evaluation procedures of the six regional accreditation agencies. Forbes and Burns (16) observed change from emphasis on policing to a program of service. Blauch (4) collected discussions of the existing accrediting agencies and the six regional associations. Armsby (3) discussed accrediting problems, with special reference to engineering.

The findings of an accreditation examination for a particular institution are usually available only to the institution itself and the accrediting agency. A conference on issues in accreditation (64), sponsored by the National Commission on Accrediting, recommended that accrediting agencies consider publishing their ratings of institutions. Selden (54) reported debate among representatives of accrediting agencies aroused by this recommendation. In a panel discussion at a later meeting, Reinert (47) proposed publication of more precise, objective data which would present to the public the differences among institutions. At present, however, evaluation by accrediting groups is of the "all-or-none" type; in this sense accreditation appears to be a crude form of evaluation.

Evaluation of institutions by accrediting agencies does not result in clear-cut distinctions between accredited and nonaccredited. Hill (24) compared, on 10 different factors, seven recently accredited colleges with seven nonaccredited colleges holding membership in the Council for the Advancement of Small Colleges. The differences on these 10 factors between the accredited and nonaccredited were not striking. In general, colleges with large physical plants and endowments and large annual gifts were favored over those financially less fortunate. Students in the nonaccredited colleges did slightly better in the Graduate Record Examination than those in the accredited colleges.

The chief data-gathering and measurement techniques of the accrediting agency are the personal interview and the questionnaire as employed by visiting teams. A questionnaire-type study by the Committee on Research and Special Studies of the Western College Association (68) found that 24 percent of institutions recently visited commented on weaknesses in the accrediting team. Variation in background of members of visiting teams and lack of adequate preparation for a visit were the criticisms most frequently made. The institutional self-study as a part of the accreditation process was endorsed by 82 percent of the respondents, but nearly half indicated some degree of dissatisfaction with the total accreditation process as now carried on.

A major need appears to be development of more objective techniques in evaluation and of norms of performance for the interpretation of findings. Discussing problems encountered in the accreditation of the liberal-arts college, Stuit (65) proposed early consideration of the construction of a test battery to measure the major intellectual outcomes of a liberal education. Tests, of course, are not the whole answer to problems of accreditation, but research on the validity of techniques and procedures currently used seems to be urgently needed.

Surveys

The last six years saw publication of a number of surveys of higher education. Many were state-wide and concerned primarily with estimating the capacity of existing colleges and universities to accommodate increased enrollments during the years ahead, and with the definition of each institution's function (6, 7, 17, 26, 28, 31, 44, 51, 52). Hollis and Martorana (27) conveniently summarized survey studies completed or under way in each state prior to 1956.

Surveys were made of curriculum problems and of personnel policies in higher education. For example, Stickler (62) reported the opinions of educational leaders on important developments in general education during the past third of a century and solicited predictions of the most important and likely developments during the next third of a century. One of the chief findings, based upon 107 replies to a letter of inquiry, was the belief that general education will continue to develop, to consolidate gains, and to solidify its position in American higher education. Sullivan (67) visited a number of colleges and universities to study administration-faculty relationships. He observed that the "one-man show" in higher education is disappearing and that the administrative process is being actively studied. Newburn (40), by visits to 11 universities, investigating faculty personnel policies, presented some interesting and challenging observations on appointment, promotion, and retirement policies and their impact on the institution. Eells and Martorana (14), studying curriculum changes which occur when two-year colleges become four-year colleges,

found a substantial decrease in terminal offerings. They also reported (15) that expansion of two-year colleges to four-year colleges is not as prevalent as has been believed.

Dressel (10), from data obtained at Michigan State University, in Arkansas, and from the Cooperative Study of Evaluation in General Education, found students quite favorable to general education and not as vocationally oriented as some writers have described them. The overlap between high-school and college courses, poor teaching in some general-education courses, and the survey approach, as used in such courses, account for some of the negative reactions to general education.

Ratings of Institutions

One of the most widely publicized evaluations of colleges and universities was made by Manly (35) of the *Chicago Tribune*. The technique used was to ask prominent educators to list in rank order the 10 best universities, 10 best coeducational liberal-arts colleges, the 10 best men's colleges, and the 10 best women's colleges. The definition of "best" was left largely to the educators. The *Tribune* reported a high degree of unanimity of opinion among educators about the rank order of institutions in each category and asserted that the rankings are supported by objective data.

The confidential ratings of departments reported by Keniston (30) were reminiscent of an earlier study by Hughes (29). Keniston's procedure was to ask department chairmen in 25 member institutions of the Association of American Universities to rate the strongest departments in their respective fields (arranged roughly as the first five, second five, and third five) on the basis of the quality of their Ph.D. work and the quality of their faculties as scholars. Composite scores for departments in each university were computed. Next, departmental scores were combined to determine divisional scores for the biological sciences, humanities, physical sciences, and social sciences. Finally, over-all ratings of the graduate work in these institutions were made and compared with the earlier ratings of Hughes.

Studies of the sort made by the *Chicago Tribune* and by Keniston are subject to serious limitations. In the words of Keniston, the ratings "depend on highly subjective impressions; they reflect old and new loyalties; they are subject to lag, and the halo of past prestige." Obviously, however, people responsible for these studies must have believed that they have merit. This may be a fact, but if evaluations of this sort are to be made, it is regrettable that the best techniques are not employed. Both the *Tribune* and the Keniston studies could have been strengthened by use of the best rating procedures available instead of reliance on general, loosely defined impressions. Failure to give precise instructions to the raters, to recognize differences in purpose and emphasis of institutions, and to seek out objective indices are serious lacks of these studies. Although one cannot "quarrel" with the list of distinguished institutions which resulted, one is

prompted to ask: If it was worth doing, why not employ the best available research methodology?

A form of institutional evaluation based upon the quality of product was developed as a part of a study conducted by Clark (8) to identify factors characterizing "significant contributors" to psychology. In one phase of the analysis, the total numbers of Ph.D.'s produced by leading departments of psychology were listed along with the numbers of significant contributors graduated from these departments. The numbers of present faculty members who are themselves significant contributors were also listed. Despite some obvious limitations (for example, differences in size of departments and quality of student input), Clark's technique seems to offer promise.

Surveys of Professional Education

Several surveys or general evaluations of professional education were completed. Although these studies are largely of the armchair variety (as opposed to the experimental), their conclusions and recommendations may lead to more precise examination of problems.

Pierson and others (45) questioned 587 institutions about faculty, curriculums, and students. The striking aspect of their study, however, is its criticism of the proliferation of courses in business education, particularly at the undergraduate level, and the consequent overspecialization. The result is a general recommendation that undergraduate business education concern itself with the study of fundamentals and with general or liberal education, and postpone emphasis on specialties to the graduate level.

Gordon and Howell (18), in a study sponsored by the Ford Foundation, analyzed business education, and included a survey of business firms, to determine their use of college graduates. The curriculums of business schools were studied by examining college catalogs. The findings were similar to those of Pierson and others (45), namely, that business education needs upgrading; that too many specialized courses are offered, at least at the undergraduate level; and that the quality of students, of teaching, and of research should be improved. These two studies should have impact upon schools of business and should stimulate research on education for business and industry.

The American Society for Engineering Education's report (2) analyzing present practices in engineering education should be useful to engineering faculties performing self-studies. Wilcox (69), studying the relationship of professional to liberal-arts content in journalism education, found the over-all ratio of courses approximately two to one. Russell (49), investigating the balance among professional, supporting, general, and elective courses in nursing education, found the 50 to 50 ratio between liberal-arts and professional courses, often advocated on theoretical grounds, difficult to maintain in practice. Stewart and Dixon (61), studying Oberlin College

students who went to medical school and using as a point of departure the recommendations of Severinghaus, Carman, and Cadbury (55), found no evidence to indicate that the premedical science majors at Oberlin slighted the liberal-arts content by pursuing a major in premedicine or that they did less well in medical school.

Dressel, Mayhew, and McGrath (12), examining the views held by professional-school faculty members regarding liberal education, observed that, although professional-school faculty members favor study of the liberal arts in principle, in practice they tend to give preferred status to liberal-arts subjects which are allied to their professional fields. McGrath and Russell (34), analyzing the catalogs of 50 small or medium-sized independent liberal-arts colleges, observed that more and more professional content has crept into the liberal-arts curriculum. They cautioned that alertness will be required to avoid narrowness in the development of undergraduate courses which have a vocational, as opposed to a liberal, purpose.

Self-Studies

The greatest effort in institutional or program evaluation during the past six years was in the category of self-studies. The range of these studies as to purpose, procedures, and general value of findings is wide. Donaldson (9), summarizing the findings of 38 studies of the aims and methods of liberal-education grants from the Fund for the Advancement of Education during 1952 and 1953, set forth the strengths and weaknesses of self-studies and listed some of the outcomes evident in the continuing educational program on each campus.

The approaches used and problems investigated in self-studies take on a considerable measure of uniqueness. Spearman (59), reporting a conference of 200 faculty members from the three divisions of the Consolidated University of North Carolina, discussed undergraduate instruction, research and graduate training, student-faculty relationships, and the function of the university in service to the state. McEwen and Synakowski (33) described a Hamilton College study of the desirability of increased enrollment, paying particular attention to implications for the curriculum. Quality of teaching was emphasized by studies at Goddard and Allegheny Colleges, reported respectively by Hamlin (20) and Pommer (46).

One of the most detailed self-studies was that of New York University (39), in which 400 members of the faculty and administration participated and to which several outside authorities contributed extensively. The procedures employed were: (a) critical review by committees, (b) evaluations of aspects of the university's educational program by students, and (c) discussion in a series of conferences. There were, however, no systematic appraisals of student performance or of alumni achievements. The self-study recommendations touch nearly every aspect of the university's life—educational, administrative, and physical. The techniques employed

in the study are not unique, but the intensiveness and extensiveness of the project are worthy of note. As part of a University of Pennsylvania study, Shryock (56) interviewed members of the faculty to assess morale. His report went well beyond an analysis of the University of Pennsylvania and extensively discussed achievement of excellence in higher education, giving attention to recruitment, promotion, tenure, retirement, and financial rewards for faculty. The recommendations are worthy of consideration by educators generally.

Eckert and Keller (13) edited condensed reports of 23 studies at the University of Minnesota, from 1942-52. The findings and implications regarding operations studied included the undergraduate program, specialized and graduate education, staff activities, and general education; the technique employed was analysis of records, questionnaires, interviews, and tests. Particularly to be noted are follow-up studies of former students in the College of Science, Literature, and the Arts and of University of Minnesota Ph.D.'s. The report is especially noteworthy because it presented findings from a program of institutional research which is among the oldest and most extensive in American higher education.

Stroup (63), along with Donaldson (9), raised the question of the worth of self-studies, citing as advantages the increased attention to purposes, activation of ideas, and encouragement of co-operative interdepartmental thinking, and at the same time pointing out that making a sound self-study is not an easy task. Pace (41), basing his discussion on the self-study at Syracuse University, observed that a self-study requires (a) careful planning, (b) involvement of a large segment of the faculty, and (c) assistance of specialists in educational research. Russell (50) emphasized the merits of using an agency in self-studies, stressing the fact that it can provide comparative or normative data and independent judgments.

One is inclined to agree with Pace (41) that the field of self-studies lacks "a general theory, design, and methodology." These inadequacies should receive the prompt attention of researchers if self-studies are to be worth the effort they require.

Co-operative Studies

Dressel and Mayhew's study (11), sponsored by the American Council on Education assisted by the Carnegie Corporation, was concerned with the evaluation of general education in six areas: social science, communications, science, humanities, critical thinking, and attitudes. Fifteen institutions participated. The chief contributions were in methodology. First, the report described fully the problems involved in the construction of evaluation instruments, and especially emphasized the importance of defining objectives, critical testing of the methodology adopted, and relating test results to other scores. Second, it described the measurement of gains during stated periods, along with the possible effects of different

methods of instruction and different teachers and of institutional differences. Third, it candidly stated the problems of evaluation, describing successes and failures experienced in the course of the study. Finally, it made suggestions and presented hypotheses which may help investigators, and encouraged experimentation and co-operative effort among institutions.

The Dressel-Mayhew report presents the type of approach which should receive more attention in the broad field of institutional evaluation. If evaluation is to be undertaken seriously, instruments will have to be constructed after the pattern described, for the problems encountered will be similar to those which confronted Dressel and Mayhew and their committees.

A co-operative study of 341 liberal-arts colleges' output of Ph.D.'s in chemistry from 1936 to 1956 was carried out preliminary to the Wooster conference on research and teaching in liberal-arts colleges (48). Those which produced 30 or more Ph.D.'s during the two decades were classified as very productive; 15 to 29, productive; 5 to 14, borderline; 4 or fewer, unproductive. Special questionnaires were sent to a sampling of 30 colleges in each of the four categories, and a less detailed form of questionnaire was sent to the remaining 221 institutions. The very productive colleges were found to have the best-prepared faculty members, largest student bodies, lowest course loads, best library and laboratory facilities, and greatest professional interest on the part of faculty members, and they were carrying on more research in chemistry.

The Wooster study called attention to several factors which appear to bear on the chemistry Ph.D. productivity of liberal-arts colleges. It had, however, two serious shortcomings. First, adequate consideration was not given to differences in enrollment. The number of Ph.D.'s produced per thousand graduates would seem to be a better criterion measure. Equally important, no adjustment was made for differences among colleges in quality of students. It is reasonable to believe that high productivity can be explained by high aptitudes of the students that colleges enroll. It would be advisable to repeat the study, equating the schools with respect to students' ability level.

General Criticism

The present chapter has so far reviewed only statistical or experimental studies.

A number of articles analyzed critically many of the current practices in higher education, and some its basic philosophy. Smith (57, 58), for example, called attention to the lack of real educational contact between students and teachers or between administrators and students, and to the exaggerated emphasis on marks. He deplored especially the fact that many professors engage in unimportant research and therewith find no time for students except in a huge lecture hall, where contacts are of necessity highly impersonal. Mills (37), in a somewhat different vein, emphasized

the importance of research to good teaching and suggested ways in which research might be fostered in the small college. Harris' observations (21) were similar to those of Smith. Although the statements of Harris and Smith are to some extent personal, their criticisms must be taken into account by anyone who is seriously concerned about the quality of higher education.

Summary

A striking development in institutional evaluation was the interest in self-studies, prompted by concern about quality of higher education, the need for long-range planning, and the support of philanthropic foundations. It seems likely that the results were useful to the individual institutions, but it is also evident that the findings were not widely applicable. Better co-ordination in the making of self-studies is needed.

The concern of institutions and accrediting agencies about the validity of accrediting procedures and the role of accrediting in institutional improvement augurs well for the future. Accrediting agencies are in a strategic position to encourage self-studies and to help interpret their findings. In addition, the time has come when accrediting agencies should carefully study the validity of their own procedures and launch studies looking to the improvement of accrediting practices. The need is urgent for bold and imaginative research on accreditation.

Publication of a number of state-wide studies of higher education indicates growing concern about the ability of existing institutions to meet the needs of society for college-educated citizens. Such studies have resulted in clearer definition of function for some institutions. Taken together these studies should result in positive steps to serve the needs of youth in higher education.

The studies reviewed here indicate a lively degree of interest in evaluation and at the same time point up the many problems to be faced. It is encouraging that faculty members, administrative officers, laymen, and students are concerned about the quality of higher education. Such a concern means that research will probably be aimed at solving measurement problems. Research needs are summarized by Stuit, Helmstadter, and Frederiksen (66) as follows: (a) evaluation instruments, such as achievement tests, which measure educational outcomes not well measured by presently available tests; (b) better normative data for interpretation of results from available tests and new normative data for new instruments where appropriate; (c) better understanding of how to organize and direct evaluation; and (d) better definition of good practice in certain aspects of the educative process, such as teaching and counseling.

As yet one cannot say that great things have been achieved in institutional evaluation. In addition to the technical problems already listed, there are the problems of complacency over the quality of higher education

and skepticism as to the workability of new, objective techniques in institutional evaluation. In some cases the skepticism becomes hostility because of a fear that evaluation may disclose "skeletons in the closet" or may interfere with the freedom of an institution in deciding its curriculum and teaching practices.

Concern about the quality of higher education, particularly in science education, has brought forth some searching questions about present practices and procedures of instruction. Some of these questions cannot be answered, because little attention has been given to serious evaluation of institutions. Perhaps one benefit of the present concern about quality will be stimulation of research on institutional evaluation.

Bibliography

1. AMERICAN COUNCIL ON EDUCATION, OFFICE OF STATISTICAL INFORMATION AND RESEARCH. *Report on Current Institutional Research*. Washington, D. C.: the Council. Published in irregular intervals since 1958.
2. AMERICAN SOCIETY FOR ENGINEERING EDUCATION, COMMITTEE ON EVALUATION OF ENGINEERING EDUCATION. "Report on Evaluation of Engineering Education; With Summary." *Journal of Engineering Education* 46: 25-60; September 1955.
3. ARMSBY, HENRY H. "Accreditation of Engineering Curricula." *Higher Education* 12: 23-30; October 1955.
4. BLAUCH, LLOYD E., editor. *Accreditation in Higher Education*. U. S. Department of Health, Education, and Welfare, Office of Education. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1959. 247 p.
5. BLOOM, BENJAMIN S. "How May the Special Contributions of Liberal Arts Education be Evaluated?" *Current Issues in Higher Education*, 1954. Proceedings of the Ninth Annual National Conference on Higher Education. Washington, D. C.: Association for Higher Education, a department of the National Education Association, 1954. p. 283-87.
6. BRUMBAUGH, AARON J. "Higher Education in Louisiana." *Higher Education* 13: 33-36; November 1956.
7. BRUMBAUGH, AARON J. "A Statewide Study of Higher Education in Florida." *Higher Education* 13: 79-81; January 1957.
8. CLARK, KENNETH E. *America's Psychologists; A Survey of a Growing Profession*. Washington, D. C.: American Psychological Association, 1957. 247 p.
9. DONALDSON, ROBERT S. *Fortifying Higher Education: A Story of College Self Studies*. New York: Fund for the Advancement of Education, 1959. 63 p.
10. DRESSEL, PAUL L. "Student Views Regarding General Education." *Journal of Higher Education* 29: 41-46; January 1958.
11. DRESSEL, PAUL L., and MAYHEW, LEWIS B. *General Education: Explorations in Evaluation; The Final Report*. Washington, D. C.: American Council on Education, 1954. 302 p.
12. DRESSEL, PAUL L.; MAYHEW, LEWIS B.; and McGRATH, EARL J. *The Liberal Arts as Viewed by Faculty Members in Professional Schools*. New York: Institute of Higher Education, Bureau of Publications, Teachers College, Columbia University, 1959. 68 p.
13. ECKERT, RUTH E., and KELLER, ROBERT J., editors. *A University Looks at Its Program: The Report of the University of Minnesota Bureau of Institutional Research, 1942-52*. Minneapolis: University of Minnesota Press, 1954. 223 p.
14. EELLS, WALTER CROSBY, and MARTORANA, S. V. "Curricular Changes in 2-Year Colleges that Become 4-Year Colleges." *Higher Education* 13: 149-53; April 1957.
15. EELLS, WALTER CROSBY, and MARTORANA, S. V. "Do Junior Colleges Become Four-year Colleges?" *Higher Education* 13: 110-15; February 1957.

16. FORBES, JOHN, and BURNS, NORMAN. "Accreditation." *Encyclopedia of Educational Research*. Third edition. (Edited by Chester W. Harris.) New York: Macmillan Co., 1960. p. 11-15.
17. FRETWELL, ELBERT K. JR., and DORAN, KENNETH T. "Higher Education in New York State Faces the Future: A Summary of the State Education Department's Research in Needs and Facilities." *Educational Record* 39: 161-69; April 1958.
18. GORDON, ROBERT A., and HOWELL, JAMES E. *Higher Education for Business*. New York: Columbia University Press, 1959. 491 p.
19. HAGEN, ELIZABETH P., and THORNDIKE, ROBERT L. "Evaluation." *Encyclopedia of Educational Research*. Third edition. (Edited by Chester W. Harris.) New York: Macmillan Co., 1960. p. 482-86.
20. HAMLIN, WILFRID G. "A College Faculty Looks at Itself." *Journal of Higher Education* 28: 202-206, 236; April 1957.
21. HARRIS, ARTHUR S. "Reflections of a Departing Instructor." *Journal of Higher Education* 25: 65-70, 111; February 1954.
22. HATCH, WINSLOW R., editor. *Reporter: Clearinghouse of Studies on Higher Education*. U. S. Department of Health, Education, and Welfare, Office of Education, Circular No. 562. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1959. 78 p.
23. HATCH, WINSLOW R., editor. *Special Reports: Clearinghouse of Studies on Higher Education*. U. S. Department of Health, Education, and Welfare, Office of Education, Circular No. 563. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1959. 59 p.
24. HILL, ALFRED T. "Small Colleges Win Accreditation." *School and Society* 87: 117-19; March 14, 1959.
25. HOLLAND, JOHN L. "Undergraduate Origins of American Scientists." *Science* 126: 433-37; September 1957.
26. HOLLIS, ERNEST V. "State-Supported Higher Education in Arizona: Report of a Survey." *Higher Education* 11: 135-37; May 1955.
27. HOLLIS, ERNEST V., and MARTORANA, S. V. "Advance Planning for Higher Education in the United States." *Higher Education* 12: 101-108; March 1956.
28. HOLY, THOMAS C.; MCCONNELL, T. R.; and SEAMANS, H. H. "California Studies its Needs and Resources in Higher Education." *Educational Record* 36: 291-303; October 1955.
29. HUGHES, RAYMOND M. *A Study of American Graduate Schools Conferring the Doctorate, 1937-38 to 1941-42*. Ames: Iowa State College, 1946. 67 p.
30. KENISTON, HAYWARD. *Graduate Study and Research in the Arts and Sciences at the University of Pennsylvania*. Philadelphia: University of Pennsylvania Press, 1959. 150 p.
31. MCCONNELL, T. R. "Restudy of the Needs of California in Higher Education." *Higher Education* 12: 126-29; April 1956.
32. MCCONNELL, T. R., and HEIST, PAUL A. "Do Students Make the College?" *College and University* 35: 442-52; Summer 1959.
33. MCEWEN, ROBERT W., and SYNAKOWSKI, KALIXT S. "Planning College Enrollment for Academic Efficiency." *Journal of Higher Education* 25: 301-306, 341-42; June 1954.
34. MCGRATH, EARL J., and RUSSELL, CHARLES H. *Are Liberal Arts Colleges Becoming Professional Schools?* New York: Institute of Higher Education, Bureau of Publications, Teachers College, Columbia University, 1958. 26 p.
35. MANLY, CHESLY. "Greatest Schools in Nation—A New Survey by the Tribune." *Chicago Tribune*, April 21, 1957. 53 p.
36. MILLER, ROBERT D., editor. *Evaluation in Higher Education: Proceedings, February 12-13, 1954*. Tallahassee: Florida State University, 1954. 88 p.
37. MILLS, EUGENE S. "Promoting Research and Publication in the Small Colleges." *Journal of Higher Education* 28: 131-36, 177-78; March 1957.
38. NEVINS, JOHN F. *A Study of the Organization and Operation of Voluntary Accrediting Agencies*. Educational Research Monographs, Vol. 22, No. 3. Washington, D. C.: Catholic University of America Press, 1959. 403 p.
39. NEW YORK UNIVERSITY. *The New York University Self-Study: Final Report*. New York: New York University Press, 1956. 419 p.

40. NEWBURN, HARRY K. *Faculty Personnel Policies In State Universities*. Missoula: Montana State University, 1959. 160 p. (Multilithed)
41. PACE, C. ROBERT. "How Does an Institution Organize and Conduct an Effective Self-Evaluation?" *Current Issues in Higher Education*, 1954. Proceedings of the Ninth Annual National Conference on Higher Education. Washington, D. C.: Association for Higher Education, a department of the National Education Association, 1954. p. 251-59.
42. PACE, C. ROBERT, and WALLACE, DONALD G. "Evaluation of Institutional Programs." *Review of Educational Research* 24: 341-50; October 1954.
43. PATTILLO, MANNING M., JR. "Accrediting in the Public Interest." *Educational Record* 36: 120-28; April 1955.
44. PFNISTER, ALLAN O. "Missouri Undertakes a State-Wide Study." *Educational Record* 38: 340-42; October 1957.
45. PIERSON, FRANK C., and OTHERS. *The Education of American Businessmen; A Study of University-College Programs in Business Administration*. New York: McGraw-Hill Book Co., 1959. 740 p.
46. POMMER, HENRY F. "A Faculty Sets Its Sights." *Educational Record* 38: 146-51; April 1957.
47. REINERT, PAUL C. "Should Gradations of Institutional Excellence be Published?" *Liberal Education* 46: 73-75; March 1960.
48. *Research and Teaching in the Liberal Arts College*. A Report of the Wooster Conference. Wooster, Ohio: The College of Wooster, 1959. 164 p.
49. RUSSELL, CHARLES H. *Liberal Education and Nursing*. New York: Institute of Higher Education, Bureau of Publications, Teachers College, Columbia University, 1959. 152 p.
50. RUSSELL, JOHN DALE. "Institutional Surveys by Outside Professional Agencies." *Current Issues in Higher Education*, 1954. Proceedings of the Ninth Annual National Conference on Higher Education. Washington, D. C.: Association for Higher Education, a department of the National Education Association, 1954. p. 145-51.
51. RUSSELL, JOHN DALE. "Meeting Ohio's Needs in Higher Education; A Report of a Preliminary Survey." *Educational Record* 37: 303-309; October 1956.
52. RUSSELL, JOHN DALE. "Survey of Higher Education in Michigan." *Higher Education* 15: 133-37; April 1959.
53. SELDEN, WILLIAM K. *Accreditation; A Struggle Over Standards in Higher Education*. New York: Harper & Brothers, 1960. 138 p.
54. SELDEN, WILLIAM K. *Report of Conference on Accreditation*. Washington, D. C.: National Commission on Accrediting, 1959. 16 p.
55. SEVERINGHAUS, AURA E.; CARMAN, HARRY J.; and CADBURY, WILLIAM E. *Preparation for Medical Education in the Liberal Arts College: Report of the Subcommittee on Professional Education of the Survey of Medical Education*. New York: McGraw-Hill Book Co., 1953. 400 p.
56. SHRYOCK, RICHARD H. *The University of Pennsylvania Faculty: A Study in American Higher Education*. Philadelphia: University of Pennsylvania Press, 1959. 259 p.
57. SMITH, C. PAGE. "Human Time and the College Student." *Journal of Higher Education* 28: 70-74, 116-17; February 1957.
58. SMITH, C. PAGE. "The Sins of Higher Education." *Journal of Higher Education* 26: 31-36; January 1955.
59. SPEARMAN, WALTER. "A University Examines Itself." *Journal of Higher Education* 25: 122-28, 171, 172; March 1954.
60. STECKLEIN, JOHN E. "Colleges and Universities—Evaluation." *Encyclopedia of Educational Research*. Third edition. (Edited by Chester W. Harris.) New York: Macmillan Co., 1960. p. 285-88.
61. STEWART, BLAIR, and DIXON, ROBERT E. *Liberal Arts and Medical Education; Report of a Committee of the Faculty of the College of Arts and Sciences of Oberlin College*. Oberlin, Ohio: Oberlin College, 1957. 106 p.
62. STICKLER, WILLIAM HUGH. "Whence and Whither General Education?" *Journal of Higher Education* 28: 195-201, 235-36; April 1957.
63. STROUP, FRANCIS. "Are Self-Studies Worth the Effort?" *Journal of Higher Education* 29: 95-97; February 1958.

64. STUIT, DEWEY B., editor. *Accrediting of Colleges and Universities in the Coming Decade*. Washington, D. C.: National Commission on Accrediting, 1959. 30 p.
65. STUIT, DEWEY B. "Accrediting the Liberal Arts College." *Liberal Education* 46: 76-81; March 1960.
66. STUIT, DEWEY B.; HELMSTADTER, GERALD C.; and FREDERIKSEN, NORMAN. *Survey of College Evaluation Methods and Needs*. Princeton, N. J.: Educational Testing Service, 1956. 225 p. (Multilithed)
67. SULLIVAN, RICHARD H. "Administrative-Faculty Relationships in Colleges and Universities." *Journal of Higher Education* 27: 308-26, 349; June 1956.
68. WESTERN COLLEGE ASSOCIATION, COMMITTEE ON RESEARCH AND SPECIAL STUDIES. "Survey of Reactions to the Initial Accreditation Process of the Western College Association." *Western College Association Addresses and Proceedings, 1958-59*. Fresno, Calif.: the Association (1225 E. Welden Ave.), 1959. p. 63-72.
69. WILCOX, WALTER. *Liberal Education and Professional Journalism Education: A Study of Curricula Structure*. Iowa Studies in Mass Communications, No. 2. Iowa City: Graduate College, State University of Iowa, 1959. 49 p.

CHAPTER IX

Government, Administration, Co-ordination, and Financing of Higher Education

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RESEARCH in the areas considered here can only rarely employ controlled experimentation; the literature of the field is built upon descriptive, analytical, comparative, historical, philosophical, survey, and other techniques, including the autobiographical.

To afford at the outset a sense of balance and emphasis, we note a few of the pertinent books appearing during the last six years: those by Carmichael (11), Clark (15), Donovan (23), Glenny (30), Henderson (35), Henninger (38), Keezer (44), Medsker (49), Moos and Rourke (52), Perkins (59), Stoke (68), Woodburne (73), and Wriston (74); also the reports of the President's Committee on Education Beyond the High School (60), the Educational Policies Commission of the National Education Association (53), and the Committee on Government and Higher Education (18). The period immediately preceding 1954 was treated by Henderson and Jorgensen (36) in an earlier number of the REVIEW.

Above the Institutional Level

Higher education is a function of society sometimes regarded as a responsibility of governments, although a part of the task is permitted to be assumed by private agencies which are traditionally given a large measure of autonomy. Support of state universities and colleges, and encouragement of private institutions, is a well-established obligation of the states and will continue to be. It has also become a concern of the federal government. More support for higher education comes from local governments, too, as the number of junior colleges increases; and for decades many cities have maintained municipal colleges and universities. Practically all the 3000 counties in the United States contribute to the support of land-grant institutions by sharing maintenance of the federal-state-local co-operative agricultural extension service.

There is a place for research in the manifold relationships between higher education and the three levels of government. The chief recent work in this area is that of the Committee on Government and Higher Education, whose lucid and unequivocal report (18) recommended that the state-supported institutions of higher education be substantially relieved from much of the strait-jacketed fiscal control from the state capitol now widely exercised over their pre-auditing of expenditures, purchasing, management of real property, custody of institutional funds, printing,

internal budgeting, personnel practices, and other essential functions in which noneducational central fiscal officers of the states now often have too heavy a hand. This conclusion was backed by the findings of Moos and Rourke (52), whose nationwide investigations disclosed many examples to demonstrate that too-tight fiscal controls at the statehouse are inconsistent with efficient institutional management, inimical to morale, and destructive of the spirit of freedom which is essential in higher education.

Glenny (30), studying the co-ordination of state-supported institutions in 12 states, tacitly concluded that a formal, statutory, state-wide agency of co-ordination is preferable to a plan of voluntary liaison, though he disavowed advocacy of any "model" form of administrative organization at the state level. The Educational Policies Commission (53) recommended institutional co-operation, asserted that "the voluntary character of such cooperation is an established principle of higher education," and advocated state-wide and regional co-ordination among public institutions. The President's Committee on Education Beyond the High School (60), predicting an expansion of higher education that would exceed the goal set by the similar Truman Commission in 1947, proposed that communities consider the two-year college, co-ordinating community planning with state and regional planning.

Two histories of important administrative aspects of higher education in New York appeared: Abbott's history of the Regents of the University of the State of New York from 1784 to 1949 (1) and Carron's history of the little-understood genesis and relationships of the state-supported colleges adjacent to Cornell University (12).

The character and development of colleges and universities in the United States are considerably influenced by voluntary accrediting agencies at the national, regional, and state levels. Blauch's valuable compendium of factual articles on these activities (6) included a tabular summary of the accrediting agencies of 29 professions as of the end of 1957. The proliferation of accrediting agencies eventually led to the creation of the voluntary National Commission of Accreditation, intended to promote a degree of consistency and coherence in the field and to balance and harmonize demands of the numerous specialized groups. This story was told by Selden (67).

State-wide Surveys of Higher Education

A landmark in the history of state surveys was the California *Restudy*, reported by Holy, Semans, and McConnell (41), for the Liaison Committee of the Regents of the University of California and the State Board of Education. This report testified to the success of this voluntary agency since 1945 in devising and building up California's tripartite system of higher education and made recommendations of wide significance, some of which were implemented by the California legislature in 1960 and earlier.

Another comprehensive state survey was that of Florida, reported by Brumbaugh and Blee (8), which emphasized the need for development and expansion of higher education in a state of rapidly growing population. Brumbaugh and Chandler (9) also surveyed state-supported higher education in Louisiana, stressing organization and development. Higher education in Michigan was studied by Russell (66), who reported demographic data demonstrating the need for new junior colleges, but gave little attention to advanced graduate work in Michigan's three major universities. The only graduate professional field studied was medicine. Critics asserted that the Russell report did not take adequate account of differences among the several institutions on a vertical scale, both as to academic and professional levels and as to levels of quality. Without these distinctions, comparative unit costs are of severely limited meaning and may mislead the uninitiated.

Administrative Theory and the Education of Administrators

Discussions of administrative theory increased among political scientists, psychologists, sociologists, and group dynamicists. Since a forthcoming issue of the REVIEW will be devoted to the literature of administration, only those discussions dealing with higher education have been reported here. Litchfield, for instance (47, 48), discussed administrative theory and applied it to the large university.

Comparative aspects of academic, governmental, and business administration were presented in a symposium by Corson (21), Dodds (22), Henderson (34), and Cleveland (17), organized and introduced by Perkins (58). Perkins found too little attention hitherto given to the university as a social organism and as an administrative entity. Corson (21) observed that faculty members are professionals who "expect the right of self-direction in their work," have more voice in operational affairs than do employees of analogous rank in business and governmental enterprises, are less under the domination of "customers," and produce a service less tangible.

Dodds (22) sagely recommended in the symposium that a university president's prime responsibility be regarded as educational leadership, and that he must resist ceremonial duties, limit his public appearances, and delegate details of administration. The faculty must "accept the limitations of direct democracy in complex organizations,"—not at all incompatible with retaining their professional discretion and rightful prerogatives. Henderson (34), observing that most college and university presidents are appointed from faculty ranks, generally without prior preparation or experience other than as deans or department chairmen, saw need for broader preparation and better selection processes, and saw a beginning of both education and research toward those ends at a few universities.

Examining the predicament of the college dean as an administrator, Cleveland (17) found him no more than a leader among equals, and found the "horizontalness" of college administration nowhere exceeded except perhaps among organizations of physicians. Much that serves as general theory of public administration, derived from experience in hierarchies, had little validity here. All members of the above symposium (17, 21, 22, 34, 58) were aware that, with the rapidly increasing professionalization of governmental and business staffs, the characteristics of university administration which have been thought unique may soon permeate other types of organizations.

Institutional Organization and Administration

The institutional governing board was studied by Rauh (61), who emphasized its place and function in the organization and operation of privately controlled institutions, and embodied his conclusions in a manual for trustees.

Experienced executives commented on the office of the presidency. Stoke (68) declared: "Clear and firm decision, like good surgery, creates the antiseptic conditions for healing; nor are the strains and consequences of decision usually as unpleasant in fact as in anticipation." Woodburne (73), was convinced that "probably the most frequent mistake in top-level administration is holding deans or business officers responsible for decisions without giving them the authority to carry them out." Wriston (74) bubbled with pithy aphorisms such as: "Every time a formula is substituted for responsible judgment there is official defeasance." "Rules make decision easy but rob it of wisdom." "Every college president should rid himself of the deceptive cliché that research and teaching do not go together." All agreed a college is not a belt-conveyor manufacturing plant; not merely a hierarchy for the transmission of orders; not properly a site for a perpetual cold war between faculty and administration.

The role of the dean as faculty personnel officer, to deal with recruiting, appointments, inservice development, morale, and related responsibilities, was examined by Henderson (33) who also touched on how the character of the office has changed and developed during a quarter of a century. Eells and Hollis prepared an annotated bibliography of the administration of higher education (24). Investigating faculty personnel policies by visits to 11 state universities, Newburn (57) reported substantial data and made perceptive observations on many interviews.

Much thought and discussion about organization and operation of private liberal-arts colleges was stimulated by Ruml's widely circulated and controversial study (64), whose thesis was that institutional efficiency could be increased and faculty salaries substantially raised by reduction of the number of courses, larger classes, and a lower faculty-student ratio. Ruml insisted that these measures could be accomplished promptly and satisfactorily only if governing boards acted independently of faculty—a

reversal of the traditional role of the governing board as an "inspecting and consenting" body, and highly debatable.

The legality of the basic status and role, in all types of colleges and universities, of the governing board, the chief executive officer, administrators, faculty members, and students were studied by Chambers (14), who contended that wider comprehension of the simplicity and universality of the elementary legal principles would obviate many conflicts.

The Two-Year Community Junior College

Pursuant to the concept of the junior college as a means of providing less costly and more suitably diversified opportunities than are generally available to high-school graduates, Medsker (49) studied junior colleges nationally, concentrating on 15 states which contain two-thirds of all the public junior colleges and three-fourths of the total junior-college freshman and sophomore enrollments. He concluded that the local public junior college is, and probably will continue to be, the dominant form, as against the *state* junior college or the *branch* institution controlled by a state university or college. The last-named type appeared generally to exhibit (a) a narrower range of curriculum, (b) less freedom to experiment and adapt to local needs, (c) less financial stability, and (d) higher tuition fees.

Clark's analysis (15) of the first four years of the San José Junior College is a full-scale sociological and administrative case study which takes account of the "administrative web" in which the institution is set; its adaptation to its task; and its problems of organization, character, and role. One of the functions treated is the "cooling-out process" for the "latent terminal" students, that is, those who enroll in college-parallel courses but never proceed to further college or university studies.

Henninger's study (38) of the technical institutes goes into such problems as definition of function, justification of technical institutes, accreditation, and transferability of credits. He concluded that the two-year preparation of technicians cannot be equivalent to the first two years of an engineering college, but observed a practice among engineering colleges of admitting technical-institute graduates with such advanced credit as their proficiency warrants—the amount thus varying widely in individual cases. He noted that it is unwise to designate "terminal" curriculums, but better to call them "occupational," which actually is the more appropriate term.

Fields (25) summarized characteristics of the community college as (a) comprehensiveness, (b) accessibility, (c) reciprocity of relation to the community, (d) adaptability, and (e) service to persons of varying ages, intellectual abilities, and aims. Thornton (69) depicted this relatively new institution as an integral and indispensable part of our educational system.

The National Society for the Study of Education 1956 Yearbook (56), organized by Johnson and others in four sections, dealt with the sociological

foundations, the principal functions, the operating programs, and the planning for expansion of the nationwide network of public junior colleges. Among the merits of this report is a 12-page annotated bibliography.

The Economics of Higher Education

The changing composition of our population and the long-range trends in its occupational distribution, which, with the advance of technology, make increasing demands for trained talents, were dealt with in the Rockefeller report on education (63). Larger investment in higher education, thorough and continuous overhauling of state revenue systems, and expansion of federal support were seen as necessities.

Keezer, introducing a symposium (44), observed agreement among scholars of the finances of higher education about the apparently inevitable doubling of enrollments within a decade and the inescapable necessity of more than doubling operating funds within the same period. He also noted that from 1940 to 1954 the "real income before taxes" of faculty members declined about 5 percent, that of lawyers rose 10 percent, that of industrial workers rose 48 percent, and that of physicians rose 80 percent.

Coombs (20) showed, however, that faculty salaries rose 20 percent during the four years immediately after 1954, and another 7.5 percent in the single year 1958-59; he predicted that by 1965 they would be at twice their 1955 level. This would not solve the problem of staffing colleges, which would find themselves increasingly unable to fill their ranks with first-class teachers. This latter point has been supported by comprehensive data reported in the latest of the excellent annual studies (54) published by the Research Division of the National Education Association. A perspective looking further into the past was afforded by Ruml and Tickton (65).

The rising contribution by students in the form of tuition fees was documented by Conrad and Hollis (19), who found from a large sample that fees increased by 85 percent between 1940 and 1955. Hollis and others (40) showed that all student expenses (for board, lodging, travel, books, clothing, laundry, entertainment, and incidentals) were on a rapidly rising scale.

Harris (31, 32), speculating on the cost of higher education during the next decade, expected only modest additional contributions from philanthropy and governments, advocated increase of student fees, and proposed that families plan to pay for higher education as a commodity by the use of savings, life-insurance policies, and long-term borrowing. Different, and in some respects almost diametrically opposed, conclusions were reached by Millett (51), Chambers (13), and others, including the joint executive committees of the American Association of Land-Grant Colleges and State Universities and the State Universities Association. These latter, in general, believed it in the public interest to provide higher education in

publicly controlled institutions tuition-free or at nominal fees; that society, more than the individual, is the beneficiary; that adherence to this policy in the past has underlain our technological progress and material prosperity; and that demands of the future require its continuance. They contended that states and their subdivisions, by means of modernized revenue systems, can provide a large part of the required additional funds, though the ability of the states varies widely, but they concluded at the same time that assumption by the federal government of a larger share of the financing of higher education is inevitable.

Wide differences among the states as to "effort" to support higher education, as derived from the relation between per capita personal income and per capita expenditure for higher education, were documented by Hungate (42). Many states ranking high in "effort" were among the less developed states of the West or Southeast, whereas some ranking lowest were highly industrialized states with high per capita incomes.

The findings of Calkins (10) were intermediate between those of Harris (32) and Millett (51), but closer to the latter. Calkins stressed the importance of a reasonable autonomy for private and public colleges and universities, apparently concurring fully with the recommendations of the Committee on Government and Higher Education (18). Furnas and Ewell (27) provided a competent summary of the problems and unresolved questions related to expanded university research activities sponsored by federal agencies, and saw these enterprises, if continued and enlarged under contracts assuring an equitable recovery of all indirect costs to the universities, as a means of enhancing the size and quality of participating institutions. Kidd (46), studying the impact of federal sponsorship of research on universities, concluded that the quality of graduate training during the first years of large-scale federal support has not been impaired, as some had feared: "The gifted graduate student, as well as the group as a whole, is better trained." Recognizing many unsolved problems, such as that of exerting countervailing forces against the pressure to expand the physical sciences out of proportion to the social sciences, humanities, and arts, Kidd pointed to the crucial factor as "the national will to give first place to education at all levels, and to the fostering of excellence in all fields."

Henderson (35), who provided a comprehensive treatment of the issues facing higher education, observed that the over-all concept has been enlarged to include the development of the human resources of society and contended that the interest of the nation requires diversion of a larger share of the national income to higher education.

Finance and Fiscal Management

Ray (62), studying conflict in higher education, believed definition of educational requirements by competent professionals followed by finding

necessary resources preferable to cutting needs to fit a resource limit. He advocated effort to reduce conflict between governing boards and faculties, conflict between public and private higher education (though recognizing that it will not easily be entirely suppressed), and intrastate dissensions among public institutions. His conclusion that the basic conflict is between expenditures for higher education and expenditures for other things is one which all supporters of higher education can subscribe to. He noted the role of the various regional interstate organizations for co-operation in higher education, such as the Southern Regional Education Board, as well as other instances of voluntary co-operation.

Studying the possibilities of improved fiscal management in higher education, Heneman (37) stressed sound organization from the viewpoint of a widely experienced management consultant. Tickton (71) described and demonstrated the long-term budget as a management tool, pointing out its merits specifically for the small, independent college. Millett (50) analyzed the task of management in its university setting.

An enlightening analysis of the income and expenditures of a reasonably homogeneous group of 60 colleges, most of which were small and privately controlled, was provided by the National Federation of College and University Business Officers Associations (55). Surveying private support of higher education, Turner (72) found the annual total of somewhat less than \$1 billion to be coming in roughly equal portions from six principal sources: (a) alumni annual giving, (b) business corporations and corporate foundations, (c) general-welfare foundations, (d) individuals other than alumni, (e) churches and religious orders, and (f) bequests, trusts, annuities, and miscellaneous sources. He estimated that one-ninth of this income went to tax-based institutions, among which were 10 state universities each receiving more than \$3 million. A thorough treatment of the origins, policies, and roles of the great philanthropic foundations was provided by Andrews (2).

Clark (16) summarized the diffuse financing of educational, training, and research programs being carried on to an increasing extent by (a) industry, (b) the armed services, (c) fraternal, social, religious, labor, and other organizations, and (d) ad hoc (usually proprietary) schools and institutes, including correspondence schools, catering to individual clients. Thorp (70) firmly adhered to multiple-source financing, both as being most productive fiscally, and also because it strengthens academic freedom. He concluded that "the enhancement of our human capabilities by more and more investment in education will contribute to further technological, economic, and social development."

Reference Works

Successive editions of the two quadrennial reference books on higher education in the United States were published by the American Council

on Education in 1956 and 1960; the more recent editions are listed in the bibliography (43, 29). The American Council on Education became U. S. sales agent for the standard yearbook of British Commonwealth universities (26) and for the first edition of the handbook of the International Association of Universities (45), which describes 450 institutions in 70 countries other than the United States and the British Commonwealth. The annual report of the National Conference on Higher Education (3) appeared. Among numerous serial publications of the U. S. Office of Education were the annual list of degrees conferred (28), the statistics of land-grant colleges (39), the statistics of higher education as a whole (4), and the annual circulars of planning and management data (7). The well-known *Year Book of Education* for 1959 was devoted entirely to higher education (5).

Summary and Forecast

Among perceptible trends in early 1960 was increasing recognition of an appropriate degree of institutional freedom for state institutions. It was evidenced by increased disrepute in which unduly numerous, detailed, and rigid fiscal controls from the statehouse were held, and by recent statutes investing co-ordinating boards with only permissive functions. For example, 1960's California Coordinating Council for Higher Education has only an *advisory* function, in contrast to the drastic coercive powers of earlier prototypes such as the Oklahoma Regents for Higher Education, established by constitutional amendment in 1941. The notable studies by Moos and Rourke (52) and by Glenny (30) opened a neglected field in which investigation needs to be carried on continually. As higher education increases in complexity, study of its legal and fiscal aspects, such as that of Chambers (14), becomes more essential.

Interest in human resources, prominent in the work of Henderson (35), for example, and in the financing of higher education on a nationwide scale and a long-term basis (a decade or more ahead), as exemplified in Keezer (44), are significant. There is need for continued investigation of the relation between optimum provision of educational opportunity and the fee policies of public institutions, including those of public junior colleges. The National Defense Education Act of 1958 is a step in a new direction, and shows that the theory of "national interest" in higher education, advocated by Stoke (68) and others, is being recognized. It should be further explored.

Continuation of formal education designed for college and university administrators at the doctoral and postdoctoral levels and more commentary on the theory and practice of higher educational administration augur well. Research in all aspects of higher education is yet meager in relation to the size of the enterprise, which currently involves over \$4 billion in annual operating expenses, a figure destined to rise to \$10 billion within a decade. Establishment of centers for the study of higher education, financed tem-

porarily in whole or in part by the Carnegie Corporation of New York, at Columbia University, the University of California at Berkeley, the University of Michigan, and Stanford University and establishment of the Institute for College and University Administrators at Harvard, may begin a period of sustained and productive investigation. Of similar import are the programs, at several universities, recently subsidized by the Kellogg Foundation, relating to junior-college administration. Other hopeful signs include: the increasing research productivity of the three agencies of regional co-operation under interstate compacts; the two newly organized voluntary associations of institutions (public and private, respectively) in the seven states of the Midwest; the efforts of the Fund for the Advancement of Education and of a number of institutions to determine how to use a faculty effectively as the number of students increases; and the vigorous growth, nationwide, of the practice of institutional research and self-studies.

The research record of state-wide higher educational agencies (consolidated governing boards, superimposed co-ordinating boards, voluntary associations for liaison) is not impressive, though an exception is California, where the voluntary Liaison Committee of 15 years' standing has a history of substantial accomplishment. It should be recognized that continuing well-planned research is the first and foremost function of any state-wide educational association or agency, statutory or voluntary.

Bibliography

1. ABBOTT, FRANK C. *Government Policy and Higher Education: A Study of the Regents of the University of the State of New York, 1784-1949*. Ithaca, N. Y.: Cornell University Press, 1958. 417 p.
2. ANDREWS, FRANK EMERSON. *Philanthropic Foundations*. New York: Russell Sage Foundation, 1956. 459 p.
3. ASSOCIATION FOR HIGHER EDUCATION. *Current Issues in Higher Education, 1959*. Proceedings of the Fourteenth Annual National Conference on Higher Education. Washington, D. C.: Association for Higher Education, a department of the National Education Association, 1959. 301 p.
4. BADGER, HENRY G. *Biennial Survey of Education in the United States: 1952-54*. U. S. Department of Health, Education, and Welfare, Office of Education. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1957. Chapter 4, "Statistics of Higher Education," Section 2, "Receipts, Expenditures, and Property, 1953-54," 137 p.
5. BEREDAY, GEORGE Z. F., and LAUWERYS, JOSEPH A., editors. *Higher Education. The Year Book of Education, 1959*. Yonkers, N. Y.: World Book Co., 1959. 520 p.
6. BLAUCH, LLOYD E., editor. *Accreditation in Higher Education*. U. S. Department of Health, Education, and Welfare, Office of Education. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1959. 247 p.
7. BOKELMAN, W. ROBERT. *Higher Education Planning and Management Data, 1957-58, Salaries, Fringe Benefits, Tuition and Fees; Room and Board*. U. S. Department of Health, Education, and Welfare, Office of Education, Circular No. 517. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1958. 102 p.
8. BRUMBAUGH, AARON JOHN, and BLEE, MYRON R. *Higher Education and Florida's Future: Recommendations and General Staff Report*. Gainesville: University of Florida Press, 1956. Vol. 1, 87 p.

9. BRUMBAUGH, AARON JOHN, and CHANDLER, H. W. *Higher Education in Louisiana*. Baton Rouge: Louisiana Commission on Higher Education, 1956. 107 p.
10. CALKINS, ROBERT D. "Government Support of Higher Education." *Financing Higher Education, 1960-70*. (Edited by Dexter M. Keezer.) New York: McGraw-Hill Book Co., 1959. Chapter 9, p. 183-219.
11. CARMICHAEL, OLIVER C. *Universities: Commonwealth and American; A Comparative Study*. New York: Harper & Brothers, 1959. 390 p.
12. CARRON, MALCOLM. *The Contract Colleges of Cornell University: A Co-Operative Educational Enterprise*. Ithaca, N. Y.: Cornell University Press, 1958. 186 p.
13. CHAMBERS, MERRITT M. "Where Will the Money Come From?" *Journal of Higher Education* 31: 257-62; May 1960.
14. CHAMBERS, MERRITT M. "Who Is the University? A Legal Interpretation." *Journal of Higher Education* 30: 220-24; June 1959.
15. CLARK, BURTON R. *The Open Door College: A Case Study*. New York: McGraw-Hill Book Co., 1960. 207 p.
16. CLARK, HAROLD F. "Potentialities of Educational Establishments Outside the Conventional Structure of Higher Education." *Financing Higher Education, 1960-70*. (Edited by Dexter M. Keezer.) New York: McGraw-Hill Book Co., 1959. Chapter II, p. 257-73.
17. CLEVELAND, HARLAN. "The Dean's Dilemma: Leadership of Equals." *Public Administration Review* 20: 22-27; Winter 1960.
18. COMMITTEE ON GOVERNMENT AND HIGHER EDUCATION. *The Efficiency of Freedom*. Report. Baltimore: Johns Hopkins Press, 1959. 44 p.
19. CONRAD, HERBERT S., and HOLLIS, ERNEST V. "Trends in Tuition Charges and Fees." *Annals of the American Academy of Political and Social Science* 301: 148-64; September 1955.
20. COOMBS, PHILIP H. "An Economist's Overview of Higher Education." *Financing Higher Education, 1960-70*. (Edited by Dexter M. Keezer.) New York: McGraw-Hill Book Co., 1959. Chapter 2, p. 12-34.
21. CORSON, JOHN J. "The University—A Contrast in Administrative Process." *Public Administration Review* 20: 2-9; Winter 1960.
22. DODDS, HAROLD W. "Some Thoughts on the University Presidency." *Public Administration Review* 20: 10-16; Winter 1960.
23. DONOVAN, HERMAN LEE. *Keeping the University Free and Growing*. Lexington: University of Kentucky Press, 1959. 162 p.
24. ELLIS, WALTER CROSBY, and HOLLIS, ERNEST V. *Administration of Higher Education—An Annotated Bibliography*. U. S. Department of Health, Education, and Welfare, Office of Education, Bulletin 1960, No. 7. Washington, D.C.: Superintendent of Documents, Government Printing Office, 1960. 410 p.
25. FIELDS, RALPH R. "Community Colleges in the U. S. A.—A Link between School and University." *Higher Education*. The Year Book of Education, 1959. (Edited by George Z. F. Bereday and Joseph A. Lauwerys.) Yonkers, N. Y.: World Book Co., 1959. p. 507-13.
26. FOSTER, J. F., editor. *Commonwealth Universities Yearbook: 1960*. Thirty-seventh edition. London: Association of Universities of the British Commonwealth, 1960. 1509 p.
27. FURNAS, CLIFFORD O., and EWELL, RAYMOND. "The Role of Research in the Economics of Universities." *Financing Higher Education, 1960-70*. (Edited by Dexter M. Keezer.) New York: McGraw-Hill Book Co., 1959. Chapter 4, p. 79-102.
28. GERTLER, DIANE B. *Earned Degrees Conferred by Higher Educational Institutions, 1957-1958*. U. S. Department of Health, Education, and Welfare, Office of Education, Circular No. 570. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1959. 210 p.
29. GLEAZER, EDMUND J., JR., editor. *American Junior Colleges*. Fifth edition. Washington, D. C.: American Council on Education, 1960. 564 p.
30. GLENNY, LYMAN A. *Autonomy of Public Colleges: The Challenge of Co-ordination*. New York: McGraw-Hill Book Co., 1959. 325 p.
31. HARRIS, SEYMOUR E. "College Salaries, Financing of Higher Education, and Management of Institutions of Higher Learning." *Bulletin of the American Association of University Professors* 44: 589-95; September 1958.

32. HARRIS, SEYMOUR E. "Financing of Higher Education: Broad Issues." *Financing Higher Education, 1960-70*. (Edited by Dexter M. Keezer.) New York: McGraw-Hill Book Co., 1959. Chapter 3, p. 35-78.
33. HENDERSON, ALGO D. "The Dean Is Busy." *North Central Association Quarterly* 32: 179-85; October 1957.
34. HENDERSON, ALGO D. "Finding and Training Academic Administrators." *Public Administration Review* 20: 17-22; Winter 1960.
35. HENDERSON, ALGO D. *Policies and Practices in Higher Education*. New York: Harper & Brothers, 1960. 325 p.
36. HENDERSON, ALGO D., and JORGENSEN, RICHARD E. "Organization, Administration, and Financing of Post-High-School Education." *Review of Educational Research* 24: 331-40; October 1954.
37. HENEMAN, HARLOW J. "Opportunities for Improved Management in Higher Education." *Financing Higher Education, 1960-70*. (Edited by Dexter M. Keezer.) New York: McGraw-Hill Book Co., 1959. Chapter 6, p. 118-37.
38. HENNINGER, G. ROSS. *The Technical Institute in America*. New York: McGraw-Hill Book Co., 1959. 276 p.
39. HOLLADAY, DORIS C. *Statistics of Land-Grant Colleges and Universities: Year Ended June 30, 1956*. U. S. Department of Health, Education, and Welfare, Office of Education, Bulletin 1958, No. 2. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1958. 109 p.
40. HOLLIS, ERNEST V. *Costs of Attending College: A Study of Student Expenditures and Sources of Income*. U. S. Department of Health, Education, and Welfare, Office of Education, Bulletin 1957, No. 9. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1957. 91 p.
41. HOLY, THOMAS C.; SEMANS, HUBERT H.; and MCCONNELL, T. R. *A Restudy of the Needs of California in Higher Education*. Sacramento: State Department of Education, 1955. 493 p. (Mimeo.)
42. HUNGATE, THAD L. *A New Basis of Support for Higher Education: A Study of Current Practices, Issues and Needed Changes*. New York: Bureau of Publications, Teachers College, Columbia University, 1957. 65 p.
43. IRWIN, MARY, editor. *American Universities and Colleges*. Eighth edition. Washington, D. C.: American Council on Education, 1960. 1212 p.
44. KEEZER, DEXTER M., editor. *Financing Higher Education, 1960-70*. New York: McGraw-Hill Book Co., 1959. 304 p.
45. KEYES, H. M. R., editor. *International Handbook of Universities: 1959*. Paris: International Association of Universities, 1959. 338 p.
46. KIDD, CHARLES V. *American Universities and Federal Research*. Cambridge, Mass.: Belknap Press, 1959. 272 p.
47. LITCHFIELD, EDWARD H. "Organization in Large American Universities." *Journal of Higher Education* 30: 353-64; October 1959.
48. LITCHFIELD, EDWARD H. "Organization in Large American Universities: the Administration." *Journal of Higher Education* 30: 489-504; December 1959.
49. MEDSKER, LELAND L. *The Junior College: Progress and Prospect*. New York: McGraw-Hill Book Co., 1960. 367 p.
50. MILLETT, JOHN D. "The Job of Management." *College and University Business* 25: 22-24; September 1958.
51. MILLETT, JOHN D. "The Role of Student Charges." *Financing Higher Education, 1960-70*. (Edited by Dexter M. Keezer.) New York: McGraw-Hill Book Co., 1959. Chapter 8, p. 162-82.
52. MOOS, MALCOLM C., and ROURKE, FRANCIS E. *The Campus and the State*. Baltimore: Johns Hopkins Press, 1959. 414 p.
53. NATIONAL EDUCATION ASSOCIATION and AMERICAN ASSOCIATION of SCHOOL ADMINISTRATORS, EDUCATIONAL POLICIES COMMISSION. *Higher Education in a Decade of Decision*. Washington, D. C.: the Commission, 1957. 152 p.
54. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. "Salaries Paid and Salary Practices in Universities." *Colleges, and Junior Colleges, 1959-60*. Higher Education Series Research Report 1960-R3. Washington, D. C.: the Association, March 1960. 55 p.
55. NATIONAL FEDERATION of COLLEGE and UNIVERSITY BUSINESS OFFICERS ASSOCIATIONS. *A Study of Income and Expenditures in Sixty Colleges, Year 1953-54*. Wellesley, Mass.: the Federation, 1955. 183 p.

56. NATIONAL SOCIETY FOR THE STUDY OF EDUCATION. *The Public Junior College. Fifty-Eighth Yearbook, Part I*. Chicago: University of Chicago Press, 1956. 347 p.
57. NEWBURN, HARRY K. *Faculty Personnel Policies in State Universities*. Missoula, Montana: Montana State University, 1959. 160 p. (Multilithed)
58. PERKINS, JAMES A. "The Campus—Forgotten Field of Study." *Public Administration Review* 20: 1-2; Winter 1960.
59. PERKINS, JOHN A. *Plain Talk from a Campus*. Newark: University of Delaware Press, 1959. 195 p.
60. PRESIDENT'S COMMITTEE ON EDUCATION BEYOND THE HIGH SCHOOL. *Second Report to the President*. July 1957. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1957. 114 p.
61. RAUH, MORTON A. *College and University Trusteeship*. Yellow Springs, Ohio: Antioch Press, 1959. 112 p.
62. RAY, GORDON N. "Conflict and Cooperation in American Higher Education." *Financing Higher Education, 1960-70*. (Edited by Dexter M. Keezer.) New York: McGraw-Hill Book Co., 1959. Chapter 5, p. 103-17.
63. ROCKEFELLER BROTHERS FUND. *The Pursuit of Excellence: Education and the Future of America*. New York: Doubleday and Co., 1958. 48 p.
64. RUML, BEARDSLEY. *Memo to a College Trustee: A Report on Financial and Structural Problems of the Liberal College*. New York: McGraw-Hill Book Co., 1959. 94 p.
65. RUML, BEARDSLEY, and TICKTON, SIDNEY G. *Teaching Salaries Then and Now: A 50-Year Comparison with Other Occupations and Industries*. Bulletin No. 1. New York: Fund for the Advancement of Education, 1955. 93 p.
66. RUSSELL, JOHN DALE. *Higher Education in Michigan: The Final Report of the Survey of Higher Education in Michigan*. Lansing: Study Committee on Higher Education, 1958. 185 p.
67. SELDEN, WILLIAM K. *Accreditation: A Struggle over Standards in Higher Education*. New York: Harper & Brothers, 1960. 138 p.
68. STOKE, HAROLD W. *The American College President*. New York: Harper & Brothers, 1959. 180 p.
69. THORNTON, JAMES W. *The Community Junior College*. New York: John Wiley & Sons, 1960. 328 p.
70. THORP, WILLARD L. "Probabilities and Possibilities." *Financing Higher Education, 1960-70*. (Edited by Dexter M. Keezer.) New York: McGraw-Hill Book Co., 1959. Chapter 12, p. 274-92.
71. TICKTON, SIDNEY G. "The Long-Term Budget Projection: A New Management Tool for Colleges and Universities." *Financing Higher Education, 1960-70*. (Edited by Dexter M. Keezer.) New York: McGraw-Hill Book Co., 1959. Chapter 7, p. 138-61.
72. TURNER, W. HOMER. "The Prospects for Private-Sector Support of Higher Education." *Financing Higher Education, 1960-70*. (Edited by Dexter M. Keezer.) New York: McGraw-Hill Book Co., 1959. Chapter 10, p. 220-56.
73. WOODBURN, LLOYD S. *Principles of College and University Administration*. Stanford, Calif.: Stanford University Press, 1958. 197 p.
74. WRISTON, HENRY M. *Academic Procession: Reflections of a College President*. New York: Columbia University Press, 1959. 222 p.

Index to Volume XXX, No. 4

Page citations though made to single pages often indicate the beginning of a chapter, section, or running discussion dealing with a topic.

- Abilities, intellectual: achievement of, as a goal of college, 323
- Ability, student: relation to effectiveness of teaching methods, 356; relation to effectiveness of television instruction, 355
- Academic freedom: reactions of faculty to concept of, 314
- Academic success: prediction by intellectual factors, 300
- Accreditation, college: history of, 373; studies of, 373
- Accreditation, National Commission of: development of, 386
- Accrediting agencies: activities of, 386; regional, policies and procedures of, 373
- Achievement, educational: and socio-economic class, 291
- Achievement, high-school: and college attendance, 289
- Achievement tests: use of, in college prediction, 300
- Administration and faculty relationships, college: study of, 374
- Administrative theory: application to higher education, 387
- Administrator and student: conflicts between, 315
- Admission, college: studies of, 298
- Admission, early, to college: studies of, 344
- Admission, selective: national pattern of, 290; procedures for study of, 301
- Advanced placement: studies of, 343
- American Council on Education Psychological Examination*: institutional mean scores on, 313
- Anxiety: relation to effectiveness of methods of instruction, 356
- Application, skill of: as an outcome of independent study, 354
- Aptitude tests: use of, in college predictions, 300
- Articulation: of educational programs, 342
- Attention to television instruction: effect on achievement, 355
- Attitudes: effect of college on students', 311; of college student bodies, 291; of college students, 291; relation of, to knowledge in college students, 326
- Attitudes, changes in college: from freshman to senior, scale to measure, 328; of students, 326; resulting from group discussion, 351
- Authoritarian-equalitarian groups: among college students, 292
- Authoritarianism: college student, changes in, 315; effect of college upon, 325; relation of effectiveness of methods of instruction to, 357; scale to measure, 328
- Autocratic teaching method: study of, 352
- Biographical information: correlations with college grades, 303
- Biographical inventory: use in college prediction, 305
- Budget, long-term: as management tool in higher education, 393
- Business education: studies of, 341, 376
- Business students: characteristics of, 288
- California Test of Personality*: stability of scores on, 330
- Capacity of colleges: estimates of, 374
- Centers for study of higher education: establishment of, 393
- Change, educational: problems of studying, 330
- Character education: at the college level, 291
- Cheating, students' essays on: and college atmosphere, 316
- Chemistry: articulation of study in, 343; study of output of Ph.D.'s in, 379
- Church membership: increase in, result of college, 364
- Class size: studies of, 351, 352
- Classroom behavior: relation to authoritarianism in student teachers, 326
- Climate: college, study of, 312; high-school, and motivation to attend college, 315
- College: outcomes of, 321
- College academic success: effectiveness of intellectual predictors, 300; effectiveness of nonintellectual predictors, 302
- College admission: studies of, 298
- College Characteristics Index*: use to measure environmental press, 313
- College education: student perceptions of, 323
- College environment: dimensions of, 317; studies of, 311
- College evaluation: review and analysis of problems of, 372

- College image: perception of, by students and parents, 315
- College student body: homogeneity of attitudes, 327
- College student subculture: studies of, 315
- College students: background and characteristics, 285; entering, diversity among, 325; types of, 316
- College teachers: preparation of, 339
- College teaching: reasons for attraction to, 315
- Colleges: analysis of income and expenditures of 60, 392; enrollment trends in, 287; interaction of institutional characteristics of, with student characteristics to affect achievement, 357; public versus private, 287; ratings of, 375
- Colleges and universities: co-ordination of, 386; evaluations, research needs in, 380
- Communication, two-way: effect of, on learning via television, 354
- Community colleges: characteristics of, 389; studies of, 389; training of technicians in, 337
- Competition: and student cheating, 316
- Control, experimental: in evaluation of complex programs, 365
- Co-operative studies in higher education: description of, 378
- Co-ordination, state-wide: of higher-education institutions, 386
- Cornell University: history of state-supported colleges adjacent, 386
- Counseling programs in residence halls: evaluation of, 361
- Counselors: most important personality traits of, 362
- Criterion problems: in college prediction studies, 306
- Curiosity: as an outcome of independent study, 354
- Curriculum changes: accompanying expansion from two- to four-year college, 374
- Curriculum problems in higher education: surveys of, 374
- Dean, college: predicament of, as an administrator, 388; role of, as faculty personnel officer, 388
- Degrees conferred: annual list of, 393
- Demonstration of small objects: via television, 354
- Dental students: characteristics of, 289
- Difference scores: problem of using, in growth studies, 330
- Differential prediction and admission at college level: studies of, 307
- Disciplinary programs, student: nature of, 364; preventive and remedial, 365
- Discussion: effect of its combination with television instruction, 355
- Discussion, small-group: as used in Pyramid Plan for teaching, 352
- Discussion methods: dimensions of, 352
- Discussion versus lecture: studies of, 351
- Doctoral degree: factors tending to prolong completion of, 340
- Doctoral programs and requirements: completion of, 340
- Doctoral students: production of, and directiveness of teaching, 353; undergraduate college origins of, 288
- Dropouts, college: causes of, 322; rate of, in relation to various factors, 321
- Early admission to college: studies of, 344
- Ecology of colleges: studies of, 311
- Economics: of higher education, 390
- Edwards' *Personal Preference Schedule*: use in college prediction, 305
- Employment, college student: effects of, on achievement, 363
- Engineering: accrediting problems of, 373; curriculums and general education, 334; education, study of, 341, 376
- English fundamentals: teaching by television, 323
- Enrollment, college: accommodations by colleges of future increases in, 374; future projections of, 293; in non-baccalaureate occupational curriculums, 338; regional differences in, 286; sex differences in, 287; size of, 286; statistics of graduate, 341; study of desirability of increased, 377
- Environment, college: studies of, 311
- Ethnocentrism: effect of college upon, 292, 325
- Evaluation, problems of: in studying colleges, 371
- Evening-college students: performance in liberal-arts courses, 335
- Expenses, student: rise of, 390
- Faculty: real income of, 390; shortage of, at college level, 390
- Faculty-administration relationships, college: study of, 374
- Faculty morale: and excellence in higher education, 378
- Faculty of professional schools: views regarding liberal education, 377
- Faculty personnel policies: of 11 state universities, 388; study of, 374
- Faculty subculture, college: studies of, 314
- Federal departments' education programs: study of, 340
- Federal support of research: questions related to, 391
- Fellowships, graduate: national survey of, 341; information on, 363

- Feminine identity: and lack of commitment to intellectual goals, 328
- Finances, college: analysis of, in 60 institutions, 392; effect on accreditation, 373
- Financial aid, college student: studies of, 363
- Financing of higher education: controversy over, 390; effort of states in, 391; private support of, 392; studies of, 390
- Fiscal controls, state level: and efficient institutional management, 386
- Food-service facilities, college: studies of, 362
- Foreign students: college programs of, 365; follow-up of college training of, 365
- Foreign study: enrollment trends in, 289
- Foundations, philanthropic: origins, policies, and roles of, 392
- Fraternity, college: as an influential reference group, 312; effects of, 362
- Gains, measurement of: in evaluation, 378
- General education: acceptance of, by students, 375; achievement of objectives of, 335; bibliographies on, 336; effect on student interests, 329; important developments in, 374; in technical curriculums, 338; measuring outcomes of instruction in, 372; studies of, 334
- Gifted student: and college attendance, 289
- Gifted student, college level: and study habits, 325; studies of, 292
- Goals of education: perception by students and faculty, 291
- Governing boards of colleges and universities: study of, 388
- Government: relationship to higher education, 385
- Grading, co-operative: compared with competitive, 352
- Graduate education: studies of, 339; studies of, as a natural resource, 340
- Graduate schools: enrollment trends in, 288
- Graduate students: distribution among subject-matter fields, 288
- Graduate training: effect of federal support of, on quality, 391; seniors' plans for, 288
- Graduates: nature of, determined by initial college selection, 372; proportion of, to initial college enrollees, 321
- Growth: technical problems of studying, 330
- Health services, college: studies of, 363
- High-ability college students: studies of, 292
- High-school grade record: methods for increasing its correlation with college grade record, 302; use of, in predicting college success, 301
- Higher education: controversy over student financial support of, 390; general criticism of, 379; history of administrative aspect of, 386; reference works on, 392
- History: of accreditation, 373; of administrative aspects of higher education, 386
- Homogeneous grouping: relation to gain in achievement, of authoritarians in, 357
- Housing, college: studies of, 361
- Human resources: and financing of higher education, 393
- Ideal students: faculty and student conceptions of, 315
- Images of college: by students and parents, 315
- Impulse control: types of college students', 327
- Impulses, readiness to express: scale to measure, 328
- Independent study: accomplished through project method of teaching, 353; results of use of, 353
- Information: achievement of, as a goal of college, 323
- Institutional atmosphere: studies of, 311
- Institutional productivity: relation to *College Characteristics Index*, 314
- Institutional research: bibliography of, in graduate and professional education, 340; findings from a program of, 378
- Institutions: and relation to personal needs, 317; description of characteristics of, 316; educational, evaluations of, 371
- Instruction: improvement of, 351
- Instructors: differential effectiveness of, with various testing methods, 357
- Integration: of general or liberal education, 335
- Intellective predictors of college academic success: effectiveness of, 300
- Intellectual abilities: achievement of, as a goal of college, 323
- Intellectual ability: and college attendance, 289; of students, selectivity of colleges in, 290
- Intelligence: relation to effectiveness of teaching methods, 356
- Intelligence tests, group: use in college prediction, 300
- Interests of college students: change in pattern during college, 329; modification by general education, 329; relation of change in, to likelihood of graduation, 321

- Interview: as technique of accrediting agency, 374; teacher-student, effect of, on achievement, 357
- Intramural sports program: based on student needs, 362
- Inventory of Beliefs*: institutional characteristics and score changes on, 312; relation to other college student characteristics, 325
- Journalism education: study of, 341; study of ratio of professional to liberal-arts content, 376
- Junior-college expansion to four-year: curriculum changes accompanying, 374; prevalence of, 374
- Junior colleges: case study, 317; characteristics of, as branch of state university versus state junior college, 389; enrollment in, 286; public, yearbook on, 390; studies of, 389; studies of transfer students in, 342; training of technicians in, 337
- Laboratory instruction: experimental method of, 353
- Law education: studies of, 341
- Law students: comparison with medical students, 313
- Leadership in student activities: in relation to student-body size, 362
- Legal problems: of health service, 363
- Legal status and role: of different levels of college hierarchy, 389
- Lecture versus discussion: studies of, 351
- Liberal-arts colleges: enrollment in, 286; history of, 336; nondenominational, and authoritarianism, 316; private organization and operation of, 388
- Liberal-arts curriculum: professional content in, 377
- Liberal education: bibliographies on, 336; effects of, as personified by faculty's student nominees, 328; studies of, 334; studies of aims and methods of, 377
- Library-science education: studies of, 341
- Life Experience Inventory*: use in college prediction, 305
- Loans, student: importance of, 290; information on, 363
- Longitudinal study: of college students, 292, 327, 329
- Manifest Anxiety Scale*: use in college prediction, 304
- Married students: housing of, 361
- Mathematics: continuity in curriculum of, 343; summer program in, 344
- Medical education: sociology of, 313; studies of, 341
- Medical school: general education as prerequisite, 335
- Medical students: characteristics of, 288
- Minnesota Multiphasic Personality Inventory*: characteristics of college dropouts on, 322; comparison of college seniors with freshmen on, 329; use in college prediction, 304
- Minnesota Teacher Attitude Inventory*: relation to classroom behavior in student teachers, 326
- Minority groups: authoritarian attitudes of, 315
- Morale, faculty: assessment of, 378
- Motivation: relation to changes in IQ, 324
- Multiple correlation: use of, in college prediction, 301
- National Commission on Accreditation: development of, 386
- Need for achievement: relation to preference for independent study, 356
- Negro college students: success in Northern colleges, 302
- Nondirective teaching: effects of, 352; relation to production of doctoral students, 353
- Nonintellective predictors of college academic success: effectiveness of, 302
- Nonintellectual characteristics of students: college selectivity in, 290
- Normative data, institutional: need for, in evaluation, 372
- Nursing education: balance of professional and general-education content in, 376; eradication of dichotomy between liberal and professional studies, 335; in junior and community colleges, 337
- Objectives, institution's: use in its evaluation, 372
- Occupational aspiration: relation to social status, 290
- Orientation to college: programs for, 364
- Overachievement: and study habits, 314; as a college career type, 313
- Peer culture: as a factor in students' college experience, 316; effect on college students, 328
- Perception of college: by students and parents, 315
- Perceptions, student: as evaluative device for college student personnel services, 366
- Persistence: of changes in students, 329
- Personality: changes in, by college experiences, 303, 324
- Personality characteristics of college student bodies: studies of, 292
- Personality functioning: relation to college achievement, 327
- Personnel policies, faculty: and excellence in higher education, 378

- Personnel policies in higher education: surveys of, 374
- Physically handicapped: special facilities for, in colleges, 364
- Placement service, college: studies of, 363
- Premedical education: effect of liberal-arts content in, 377
- President, university: comments on job of, 388; prime responsibility of, 387
- Proctors: effect of, on television instruction, 355
- Profession: characteristics of faculty oriented toward, 314
- Professional education: studies of, 339; surveys of, 341, 376; tendency to become liberal, 335
- Professional schools: enrollment trends in, 288; increase in women's enrollment in, 287
- Professions, accrediting agencies for: activities of, 386
- Programs, educational: evaluation of, 371
- Project method of teaching: results of, 353
- Psychiatric approach: use on students and their problems, 293
- Psychiatry students: characteristics of, 289
- Psychological services, college: survey of research in, 364
- Public administration education: studies of, 341
- Pyramid Plan of teaching: study of, 352
- Quality: dimensions of, in colleges, 371
- Questionnaire: as technique of accrediting agency, 374
- Range, restriction of: effect on prediction, 301
- Reading clinics, college: studies of, 364
- Reference group: influences on student, 315
- Regents of the University of the State of New York: history of, 386
- Relationships, learned through guided self-discovery: retention of, 354
- Religion: in the college educative process, 363
- Religious beliefs: persistence of, after college graduation, 329
- Religious elements: in general education, 336
- Religious-emphasis week: effects of, 364
- Research: as major occupation of doctoral graduates, 339; federal support of, 341; fostering of, in small college, 380; unresolved questions related to federal sponsorship of, in university, 391
- Research-assistantship support: national survey of, 341
- Residence halls: construction of, 361; studies of counseling programs in, 361
- Responsibility, acceptance of: in self-directed class, 352; relation to achievement, 356
- Retention of factual material: learned through independent study, 353
- Rigidity: and value of independent study, 356
- Role expectations: relation to institutional goals, 317
- Rorschach: use in college prediction, 304
- Rural-urban residence: and student aspirations, 290
- Scholarly productivity of colleges: and personality characteristics of students, 292; relation of index of, to attraction of gifted applicants, 313
- Scholarship winners: personality characteristics of, 292
- Scholarships: importance of, 290; information on, 363
- Scholastic aptitude: and college attendance, 289
- Science courses: articulation among, 343
- Selection of college applicants: studies of, 298
- Self-directed class: comparison with conventional, 352
- Self-studies, college: as part of accreditation process, 374; of specific universities, 340; findings on, 377
- Semiprofessional education: studies of, 336
- Senior class, college: synthesizing courses in, 335
- Sex differences: in college enrollment, 287
- Sex role: relation to academic orientation of female college students, 328
- Size of college: effect on accreditation, 373
- Skilled worker: training of, 336
- Social roles: of college faculty, 314
- Social support, need of: and value of independent study, 356
- Social work, education: studies of, 341
- Socialization: as principal effect of college education, 326
- Socioeconomic class: and college attendance, 290; of college teachers, 315
- Sociology: of medical education, 313
- Sororities, college: effects of, 362
- Specialization, change in field of: and likelihood of graduation, 321
- Stability: of changes in students, 329
- State-supported colleges and universities: co-ordination of, 386; fiscal control of, 385; history of colleges adjacent to Cornell University, 386
- State-wide surveys: of higher education, 374, 386
- Student characteristics: relation to effective teaching, 356

- Student college personnel services: evaluation of, 366
- Student culture: effect on college student, 328
- Student employment, college: studies of, 363
- Student mortality and survival: studies of, 321
- Student personnel services: evaluation of, 365
- Student problem areas in college: priority list of, 362
- Student subculture, college: studies of, 315
- Student union: educational role of, 362
- Study activity: as a predictor of college success, 305
- Study-skills courses, college: study of, 364
- Summer-school programs: studies of, 344
- Surveys, state-wide: of higher education, 374, 386
- Teacher preparation: general-education aspects of, 335
- Teachers: differential effectiveness of, with various instructional methods, 357
- Teachers, permissive: characteristics of, 314
- Teachers, student: relation of classroom behavior to authoritarianism, 326
- Teachers, training of: for general-education instruction, 336
- Teachers colleges: enrollment in, 286
- Teaching: improvement of, 335; study of quality of, 377
- Teaching-assistantships: national survey of, 341
- Teaching machine: studies of, 355
- Teamwork class: comparison with lecture, 352
- Technical education: problems of, 338; studies of, 336
- Technical institutes: study of, 389; training of technicians in, 337
- Technical schools: enrollment in, 286; increase in women's enrollment in, 287
- Technicians: preparation of, 389; ratio of, to engineers, need to increase, 336
- Television, teaching by: results of, 323; studies of, 354
- Terminal curriculums: naming of, 389
- Terminal programs: decrease in, with shift from two- to four-year college, 375
- Terminal student, latent: "cooling out process" for, 389
- Testing, knowledge of results of: relation to learning, 355
- Theological education: studies of, 341
- Theological orientation: as integrating principle in general education, 335
- Theological schools: increase in women's enrollment in, 287
- Transfer students: studies of, 342
- Tuition: rising contribution of, to college finance, 390
- Tutorial group: study of, as teaching method, 352
- Two-year college: studies of, 389
- Underachievement: and study habits, 314; as a college career type, 313
- Union, student: educational role of, 362
- Universities: as social organisms, 387; enrollment in, 286; ratings of, 375; training of technicians in, 337
- Values of college students: changes in, 291, 311, 326, 334
- Viewing group, size of: as a variable in television instruction, 355
- Women: post-college plans of, 363
- Women's colleges: changes in students observed in, 329
- Workbook drill: comparison with other instructional methods, 355
- Writing, theme: teaching by television, 323



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The REVIEW has been published five times annually since 1931. Research literature is summarized in three-year cycles. Some topics have been included only in alternate cycles; a few topics have been treated at irregular intervals. Prior to April 1960 all issues were classified in eleven major categories. An alphabetical listing of all topics included in the last two cycles is given below; the date of the most recent issue on the topic is noted.

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